REPORT

OF THE

SECRETARY OF AGRICULTURE;

BEING PART OF

THE MESSAGE AND DOCUMENTS

COMMUNICATED TO THE

TWO HOUSES OF CONGRESS

AT THE

BEGINNING OF THE SECOND SESSION OF THE FIFTY-FOURTH CONGRESS.

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REPORT

OF THE

SECRETARY OF AGRICULTURE.

Mr. PRESIDENT:

The Secretary of Agriculture has the honor to submit his fourth annual report, covering the doings of the Department for the fiscal year ending June 30, 1896, together with some recommendations for the improvement of its work and the extension of its usefulness.

APPROPRIATIONS AND EXPENDITURES—SAVINGS.

From March 7, 1893, to October 1, 1896, the United States Department of Agriculture disbursed seven million three hundred and five thousand six hundred and thirty-seven dollars and ninety cents ($7,305,637.90). Of this sum eight hundred and sixty thousand and nineteen dollars and ninety-eight cents ($860,019.98) were paid from the appropriations for the fiscal year which ended June 30, 1893, and which aggregated two million five hundred and forty thousand and sixty dollars and seventy-two cents ($2,540,060.72).

From this last sum was saved and covered back into the Treasury one hundred and eighty-four thousand six hundred and thirty dollars and forty-seven cents ($184,630.47).

Of the 1894 appropriation—for the fiscal year ending June 30, 1894—which amounted to two million six hundred and three thousand five hundred dollars ($2,603,500), there were covered back into the Treasury six hundred and twenty-six thousand and thirty dollars and seventy-two cents ($626,030.72).

From the money appropriated for the fiscal year 1895, amounting to two million four hundred and ninety-nine thousand and twenty-three dollars ($2,499,023), four hundred and eighty-six thousand dollars ($486,000*) are unexpended. Thus, from the appropriations for three years there have been returned to the United States Treasury one million two hundred and ninety-six thousand six hundred and sixty-one dollars and nineteen cents ($1,296,661.19), and there will be

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*In round numbers; accounts not yet closed.

a remainder of four hundred and ninety thousand dollars ($490,000*) from the appropriation of two million five hundred and eighty-three thousand seven hundred and fifty dollars ($2,583,750) for the fiscal year ending June 30, 1896. There will also be covered into the Treasury about two hundred and eighty thousand dollars ($280,000*) from the appropriation for the current fiscal year 1897, amounting to two million four hundred and forty-eight thousand five hundred and thirty-two dollars ($2,448,532). Thus there will have been covered back into the Treasury since March 7, 1893, two million sixty-six thousand six hundred and sixty-one dollars and nineteen cents ($2,066,661.19) out of a total amount of eleven million one hundred and seventy-nine thousand four hundred and fifty-five dollars and forty-five cents ($11,179,455.45) on hand and appropriated.

That these great economies have been effected without in any way marring the efficiency of the Department work or unduly limiting its scope is due in a very large degree to the application of civil-service rules both in letter and spirit. The wide extension of the civil-service classification under the law has been proved by experience to be not only a great help, but absolutely indispensable to the maintenance of an economical and efficient administration of the public service.

CIVIL SERVICE IN THE DEPARTMENT.

Since March 7, 1893, the classified service has been extended until it includes every important permanent position in the United States Department of Agriculture. Reports from the chiefs of bureaus and divisions since this classification are unanimous in praising the enhanced value of the service rendered by their assistants and employees. In efficiency and economy the classification has very visibly improved the work.

This Department has for its object the discovery, investigation, development, and utilization of the agricultural resources of the United States. Primarily it is a scientific or technical Department. Its most important agencies are its scientific bureaus, divisions, and surveys. There are two large bureaus and twenty-two divisions, offices, or surveys. Of these seven are administrative, eight technical, and seven are purely scientific.

The Weather Bureau includes three business offices, six technical divisions, five scientific experts engaged in meteorological research, besides 154 observer stations and 52 signal stations along the coast and on the Great Lakes.

The Bureau of Animal Industry includes two business offices, 152 technical stations engaged in meat inspection and quarantine work, and three laboratories for investigating the diseases of animals and the causes thereof.

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*In round numbers; accounts not yet closed.

It is thus obvious that there are a great number of positions in the Department in which ordinary clerical persons can not be employed. There is hardly any work in the Department which can be efficiently carried on under the old spoils system of a quadrennial change in office. The functions of this Department have little or no relation to political policies or expedients. Its useful work should go ahead year after year systematically, and be modified only by the development of our agriculture and commerce.

Holding these views, the Secretary has endeavored by every legitimate means to firmly establish the civil service of the Department upon a basis of solid usefulness.

STATUS OF THE CLASSIFIED SERVICE.

March 4, 1893, there were two thousand four hundred and ninety-seven (2,497) men and women upon the pay rolls of this Department. But on November 1, 1896, there were only two thousand two hundred and seventeen (2,217) on the rolls; that is—notwithstanding an increased amount of work—there had been a reduction in the force of two hundred and eighty (280).

In the classified service March 4, 1893, there were 698. Of that number there were excepted from competitive examination 80, subject to noncompetitive examination 12, total 92; leaving subject to competitive examination 606.

On November 1, 1896, there were in the classified service 1,658, excepted from competitive examination 1, leaving subject to competitive examination 1,657. Thus an increase of 1,051 persons subject to competitive examination has been made between March 4, 1893, and November 1, 1896.

One of the first acts of the present Secretary made the position of appointment clerk of the Department subject to competitive examination, bringing it within civil-service rules, and continued thereunder the present incumbent, who had been appointed by the last Administration.

Other places were brought in as rapidly as possible. Now the classified service includes all officers, clerks, and employees of the Department, including the Chief of the Bureau of Animal Industry, chiefs of divisions, superintendents, chiefs of offices, State statistical agents, experts; all superintendents of quarantine stations, inspectors, assistant inspectors, veterinary inspectors, microscopists, assistant microscopists, meat taggers, stock examiners, and live-stock agents in the Bureau of Animal Industry; all professors, forecast officials, local forecasters, observers, and all other officers and clerks in the Weather Bureau; all compositors, pressmen, folders, engineers, assistant engineers, firemen, messengers, assistant messengers, and watchmen; but no messenger, watchman, or other subordinate can be promoted to the grade of clerk except after passing an examination.

The only persons not in the classified service in the Department of Agriculture are the Secretary, Assistant Secretary, and Chief of the Weather Bureau. Those officers are appointed by the President of the United States. The private secretary to the Secretary of Agriculture is the only person excepted from examination by the civil-service rules. The remaining 556 persons on the rolls of the Department November 1, 1896, were laborers, workmen, charwomen, and others in a subordinate grade. A great proportion of these 556 are rainfall and river observers in the Weather Bureau, at salaries ranging from $3 to $25 per month, and their employment is intermittent. Every person ranking as a skilled laborer and skilled workman is now included in the classified service in this Department.

NEW APPOINTMENTS.

There have been three scientific divisions established during the last four years. In that time seven vacancies have occurred by death and resignations among the chiefs of scientific divisions. How were these important positions filled? Notwithstanding the fact that none of these positions was at that time included in the classified service, those in the new divisions were filled by the appointment of skilled scientists who had served the Department under previous administrations. Five other vacancies were filled by promoting men in the same divisions. Only two were appointed from the outside.

The President of the United States has made two appointments in the Department of Agriculture since 1893. The first was that of Assistant Secretary. The gentleman chosen for that position, Dr. Charles W. Dabney, jr., is a graduate in agricultural chemistry, and had been ten years director of agricultural experiment stations in this country and eight years president of the University of the State of Tennessee. He never sought the position. The position, however, sought him with great vigor, and at last he was persuaded to accept the same, and the manner in which he has efficiently discharged all the duties thereunto appertaining has given great satisfaction to the country.

The present Chief of the Weather Bureau was appointed after an examination for promotion to a professorship in the Weather Bureau, and after that was called to his present position. He had served twenty years as a Weather Bureau observer, and was promoted to the professorship after a very severe competitive examination, followed by a practical test of skill in forecasting the weather, held under the supervision of a board made up of Professors Mendenhall and Harrington, Maj. H. H. C. Dunwoody, of the United States Army, and the Assistant Secretary of Agriculture.

After a service of about eighteen months the improvement in the forecasts of the Weather Bureau as to accuracy and utility demonstrates that the present chief is a very useful and efficient officer.

A thorough canvass of the Department shows that about 1,000 persons out of the total of 2,217 employed are engaged upon purely technical or scientific work. An analysis of the last appropriation act shows that out of the $2,448,532 appropriated for the Department of Agriculture, over $1,700,000, or about 70 per cent, was appropriated for scientific or technical as distinguished from the administrative or general work.

DIRECTOR OF SCIENTIFIC WORK.

There is one more step to be taken to complete the already nearly perfect system of civil service in this Department. Every chief of a bureau or division, except the Chief of the Weather Bureau, is now in the classified service. The Secretary and Assistant Secretary are appointed by the President. They therefore change with every incoming Administration. There is, consequently, every four years a period of time when the Department is left without a single administrative officer to hold this vast and useful system together. But there should be such an officer. Therefore, in this connection attention is called to the communication sent to the Senate and House Committees on Agriculture, dated February 15, 1896, in which it is urged upon the legislative branch of the Government as a simple business proposition, needing no argument to support it, that this vastly important and comprehensive work, promoting, as it does, the development of almost every resource of our land and every industry of our people, our production at home and our markets abroad, and concerning even the food and health of a large part of our population, for which $1,750,000 is annually expended, and in which nearly a thousand scientific and technical experts are engaged, should have a permanent, broadly educated, and experienced scientific superintendent.

No permanent and adequate direction and supervision is provided in the present organization of the Department. It is not to be supposed that the Secretary of Agriculture, a member of the President's Cabinet, even if a farmer and an experienced executive, will necessarily be a technically trained scientific man. Even if he should be, he occupies the position only four years, and thus scarcely becomes familiar with the difficult and complex work of the Department before he leaves it. The Assistant Secretary of Agriculture is subject to the same conditions. Because he must represent the Secretary in the Administration, he must go with the Administration. These conditions, which are necessary and inherent in our system of government, it is not proposed to change. A Secretary and Assistant Secretary are both needed. But another permanent officer is needed to direct the work of the various scientific bureaus of the Department, under the general authority of the Secretary, and to give permanence to the policy of the Department.

NECESSITY OF SETTLED POLICY FOR SCIENTIFIC WORK.

In order to accomplish the best and most permanent results, this Department must have a settled policy with regard to all its scientific work. This Department has less relation to the general executive business of the Government, and less connection with what is usually called politics, than any other Department of the Government. In fact, the scientific work of the great bureaus, divisions, and surveys, above referred to, should be kept free from politics to be efficient and impartial to the interests of all. The numerous bureaus and divisions do not have under the present organization, in fact can not have, the attention and direction which the interests involved demand. After a change of Administration the Department is practically headless, and to a great extent helpless, until the new Secretaries have had time to master the details of the technical work. Such a director of scientific divisions is needed therefore, if for nothing else, to carry on the scientific work of the Department from one Administration to the next. Is it conceivable that any great manufacturing, railroad, or mining company, undertaking such difficult scientific work, and using so much money and so many men, would provide for it no permanent scientific direction or supervision whatever, and then change all the heads every four years, leaving the work practically at a standstill, or, which is worse, entirely without direction or supervision, for six months to a year? The change of Administration affects the work of this Department even more than it does that of others, because its work is less of a routine character, is more progressive, changes more frequently, and thus requires constant direction to keep it usefully going. The bureaus and divisions of this Department can not do practically the same thing year after year, as they do in the great business Departments of the Government, but must, if they serve the people properly, do a new and different thing almost every month in the year. They therefore need constant assistance and supervision much more than do the divisions of other Departments.

NEED OF AN ADDITIONAL EXECUTIVE OFFICER.

Aside from these special considerations with regard to the scientific work, the Department of Agriculture greatly needs another general executive officer. It has only two Secretaries authorized to take official action. There is no provision in the laws for any officer of the Department to act in case of the absence of the two Secretaries, as there is in some of the other Departments. Either the Secretary or the Assistant Secretary has to be present in the Department every day and every official hour during the year.

The bureaus and divisions in Washington are, contrary to the popular idea, much the smaller part of the Department of Agriculture.

Outside of Washington there are 154 observing stations and 52 signal stations of the Weather Bureau. There are 152 meat inspection stations in 40 different cities and towns in the country; 21 different quarantine stations for import cattle at points on the coast, the Canadian and Mexican boundary; 9 different stations for inspecting export stock, and 19 for inspecting stock for Texas fever, making a total of nearly 200 stations in the Bureau of Animal Industry, which should have inspection and supervision occasionally by the highest authority of the Department. The agricultural experiment stations, located in different States and Territories, and several experiment stations of the Department of Agriculture must be inspected by this Department. In addition to these, the Department has many other agencies for studying soils, foods, and food dietaries, testing timbers, and collecting material illustrating our natural resources, scattered all over the country. The Secretaries or Director should be in position to visit and examine the work of the various agencies for the purpose of informing themselves as to their uses and needs. In view of the great amount ot business done, and of the large number of branches of the Departmenf scattered all over the country, another executive officer is greatly needed in order to permit a better distribution of work and a more regular and thorough supervision of the outlying branches of the Department. The new officer here asked for should therefore be authorized to act, when called upon by the Secretary, as a Second Assistant Secretary.

The salary attached to the position should be sufficient to secure the services of a broadly educated scientific man, who has had the necessary experience in the administration of affairs and the direction of scientific work, and should be equal to that paid for similar services in other branches of the Government.

These considerations were duly presented to the Senate Committee on Agriculture and Forestry, and the subject was held under advisement some time with the result that Senate bill 3131, providing for carrying those suggestions into practical effect, was introduced, but it was too late for consideration during the last session of Congress. The report of the Senate committee recommending the passage of the bill was accompanied by the testimony of several distinguished scientific gentlemen who had appeared before the committee. It was also advocated in a great number of letters and memorials from institutions of learning and scientific men throughout the country. In view of the evident unanimity of the scientific world in favor of the establishment of the office of "Director in Charge of Scientific Bureaus and Investigations" for the Department of Agriculture, the estimates for the next fiscal year contain a recommendation for an appropriation for the salary of $6,000 per annum, to be paid to whomever may be selected for this position.

INADEQUACY OF SALARIES OF HIGHER OFFICIALS.

It is well to here reiterate the statement made in the report of the Secretary of Agriculture for 1895, that the salaries paid in this Department for ordinary clerical work are out of proportion to those paid scientific experts who render the highest type of intellectual service. The chiefs of scientific bureaus and divisions and their skilled assistants do the actual thinking and reasoning for the development and elevation of agricultural science. These persons are not adequately compensated. Practical, scientific investigation of agricultural problems is the primary function of this Department. The best ability and attainments can only be enlisted by the offer of sufficient salaries. And, in addition to compensation, laboratories, equipments, libraries, and clerical assistance must be generously furnished, in order to retain the highest character of skill and experience.

The scientific organization of this Department has been formulated during the last six or eight years. The average age of chiefs of scientific bureaus and divisions is 42 years and 3 months. The youngest chief is 29 years and the oldest 51 years of age. Among these heads of scientific divisions and bureaus the longest term of service is 13½ years. The average age of assistant chiefs is 31 years and 4 months, the youngest being 28 and the oldest 35 years of age. The assistant chief longest in the service has been in the Department 5 years and 3 months. The average duration of service of the assistants is only 2 years and 4 months.

The foregoing shows that the Department of Agriculture is very generally officered by young men. This is suggested, not as a disadvantage at the present time, but because it is proved by the experience of the past few years that these young gentlemen can not be retained by the Department at the present rate of compensation.

The salary of a chief is now $2,500, and that of an assistant $1,800. These salaries are not adequate. It has therefore been recommended in the estimates for the next fiscal year that the salaries of chiefs of divisions be increased to $3,000 and those of assistant chiefs to $2,000. This recommendation is submitted in the interests of equity and in order to put chiefs of the Department upon an equality with scientific experts employed in other branches of the Government service. In the Coast Survey salaries of the principal scientific assistants range from $3,000 to $4,000. Geologists and chiefs of scientific divisions in the Geological Survey receive from $2,700 to $4,000. In this Department there is also precedent in the salaries paid professors of meteorology in the Weather Bureau and in the compensation of Director of the Office of Experiment Stations, already fixed at $3,000 per annum. These salaries may be fairly compared with those paid scientific professors in the universities, colleges, and other institutiots of learning in the United States. Inquiry shows

that the salaries of heads of scientific departments in universities and colleges in the Eastern States range from $3,000 to $5,000, while in those institutions in the great populational centers, where the cost of living is enhanced, far larger sums are paid per annum.

Salaries paid directors of experiment stations in the various States show that these officials are paid in the Eastern and Middle States an average salary of $2,930. The same officers in the South Atlantic States average $2,800 per annum. In the Central Western States they are paid $2,550, and in the Rocky Mountain and Pacific States a little more than $3,100, and living expenses in all of the localities referred to are probably much lower than in Washington.

VALUABLE SERVICES LOST TO THE DEPARTMENT.

On account of the low salaries paid for scientific and skilled services, the Department is constantly losing some of its ablest and best workers. The universities, colleges, and experiment stations, paying better salaries and offering equal opportunities for useful work and the acquirement of national reputation, are frequently taking the best men. Thirty-two leading scientific experts have left the Department during the last few years to take positions in other institutions, at a rate of remuneration averaging fully 50 per cent more than they received from the Government of the United States. Quite a number of scientists who received under the Government from $1,000 to $1,200 per annum only have gone to the service of colleges, universities, and private institutions of learning and corporations, at salaries ranging from $2,000 to $3,000 per annum, with possibilities of still greater compensation.

It is evident from the foregoing that the Department can not retain its needed share of learned and experienced experts, unless it pays salaries equal to those given for similar services in the educational and commercial corporations of the country.

INSPECTION OF ANIMALS INTENDED FOR FOOD.

The Bureau of Animal Industry must continue to increase the number of its force in all of the great cattle and swine centers of the United States, if efficiency is attained and maintained. The ante-mortem and post-mortem inspection of animals intended for food involves great labor and skill. The inspectors and assistant inspectors, whose duty it is to look after and report upon these cases, are in the classified civil service. No man can be examined by the United States Civil Service Commission for either inspector or assistant inspector who does not—as a condition precedent to such an examination—first exhibit his diploma from some reputable veterinary college.

Of the fifty-one (51) in the performance of this particular character

of inspection in the year 1895, fourteen (14) only had passed the examination, while of the seventy-seven (77) now employed, forty-six (46), have been taken from the eligible list of the Civil Service Commission. This shows the steady growth of a legitimate and purely nonpartisan service in this important Bureau.

Table showing total number of employees engaged in meat inspection only on the 30th of June of each year and the number of these who were appointed upon certification by the Civil Service Commission.

Year.	Inspectors and assistant inspectors.		Stock examiners and taggers.		Clerks.		Microscopists.	Assistant microscopists.	Laborers.	Total.
	Total.	Civil-service appointments.	Total.	Civil-service appointments.	Total.	Civil-service appointments.				
1892	33		151		11		7	143	30	375
1893	32		163		6		9	177	31	418
1894	40		199		6		7	171	16	439
1895	51	14	232		12		5	195	32	527
1896	77	46	287	76	17	4	4	183	11	579

INCREASED EFFICIENCY DUE TO CIVIL SERVICE.

The effect of placing the force of the Bureau of Animal Industry within the classified service has been very marked in increasing its efficiency and improving its discipline. This is particularly apparent with the employees stationed at other cities than Washington. The decreased expense of the inspection work is largely due to this improvement in the force. Every person feels now that his standing, retention in the service, and chance of promotion depend upon the interest which he shows and the care and fidelity with which his duties are efficiently performed.

On March 4, 1893, there were seven hundred and eighty-one (781) persons employed by this Bureau, but on November 1, 1896, there are only seven hundred and fifty-eight (758), notwithstanding the fact that the work has more than trebled.

Since March 4, 1893, one hundred and fifty-eight (158) persons have been placed in this Bureau from the eligible lists of the United States Civil Service Commission.

These facts demonstrate to the consumers of the meat products of the United States at home and abroad that there is a scientific and careful inspection made of all meats intended for interstate and foreign commerce. The sanitary value of the system is beyond computation. It protects health and life. Inspection will become so general and so perfect that not a single pound of unwholesome meat will find its way from the United States to foreign markets, nor will any be sold at home which does not carry certification of inspection. State

and municipal authorities are becoming more alert in cooperating with the United States authorities in their attempt to prevent the sale in great cattle and swine slaughtering cities of the animals, carcasses, and meats which the inspectors of the Bureau of Animal Industry have rejected and thrown out of interstate and foreign trade.

ANTE-MORTEM INSPECTION OF ANIMALS AT ABATTOIRS AND STOCK YARDS.

Following is a statement of the ante-mortem work at the abattoirs and stock yards. The figures in the first column approximate the actual number of animals inspected for abattoirs having Government inspection, and include those inspected in the yards for such local abattoirs and those inspected at the abattoirs in cities where there is no yard inspection. The second column gives the additional number of inspections in the yards on animals not purchased for the official abattoirs in those cities, and does not represent the actual number inspected, for the reason that as the inspection is made at the scales and the animals may change hands several times, being weighed on each occasion, the same animal may pass the inspector more than once. The number of animals rejected as unfit for food may be ascertained by adding the number condemned at the abattoirs, both ante-mortem and post-mortem, and the number condemned post-mortem in the stock-yards inspection.

Ante-mortem inspection.

Animals.	Number of inspections.			Animals condemned.		
	For official abattoirs in cities where the inspection was made.	For abattoirs in other cities and miscellaneous buyers.	Total.	At abattoirs.	In stock yards.	Total.
Cattle	4,050,011	3,479,512	7,529,523	233	22,123	22,356
Sheep	4,710,190	1,608,094	6,318,284	692	12,533	13,225
Calves	213,575	101,271	314,846	47	2,790	2,837
Hogs	14,301,963	7,452,863	21,754,826	11,889	39,092	50,981
Total	23,275,739	12,641,740	35,917,479	12,861	76,538	89,399

Last year the number of animals inspected for abattoirs having official inspection was 18,783,000, and the total number of ante-mortem inspections made was 23,885,721. There has been an increase in the past year, therefore, in the number of animals inspected for abattoirs where inspection was maintained of 4,492,739, or nearly 24 per cent, which is due principally to the extension of the inspection to sheep which had not before been possible. The increase in the total number of inspections is 12,031,758, or over 50 per cent.

POST-MORTEM INSPECTION OF ANIMALS.

Following is a table showing the number of animals inspected at time of slaughter and number of carcasses and parts condemned:

Post-mortem inspection.

Animals.	Number of inspections.			Carcasses condemned.			Parts of carcasses condemned at abattoirs.
	At abattoirs.	On animals condemned in stock yards.	Total.	At abattoirs.	Stock yards inspection.	Total.	
Cattle	3,985,484	9,977	3,995,461	4,886	3,871	8,757	6,798
Sheep	4,629,796	3,546	4,633,342	2,794	1,541	4,335	242
Calves	256,905	931	257,836	276	761	1,037	33
Hogs	14,250,191	28,028	14,278,219	31,178	15,011	46,189	33,930
Total	23,122,376	42,482	23,164,858	39,134	21,184	60,318	41,003

Last year the number of post-mortem inspections reported was 18,883,275.

There were 13,289,680 quarters and pieces of beef, 328,589 carcasses of hogs, 151,959 sacks of pork, 3,516,896 carcasses of sheep, and 183,685 carcasses of calves tagged or otherwise marked as inspected meat. Of these there were exported 1,030,334 quarters and 16,818 smaller pieces of beef (equivalent to nearly 260,000 cattle), 349 carcasses of sheep, and 3,281 carcasses of hogs.

The meat-inspection stamp was affixed to 3,697,701 packages of beef and 6,034,165 packages of hog products; 63,313 of the latter contained microscopically examined pork. There were issued 15,211 certificates of inspection for meat products, of which 3,481 were for microscopically examined pork.

There were sealed 11,855 cars containing inspected meat in bulk for shipment to establishments having Government inspection and to other places.

COST OF INSPECTION, TAGGING, ETC.

The cost of this work was $341,456.25, or 0.95 cent for each ante-mortem inspection, and covers the expense of all subsequent work of post-mortem inspection, tagging, stamping, and issuance of certificates of inspection. In 1895 it was 1.1 cents, in 1894 it was 1¾ cents, and in 1893 it was 4¾ cents.

Table showing number of abattoirs and cities where inspection was maintained during the fiscal years given.

Fiscal year.	Number of abattoirs.	Number of cities.
1892	28	12
1893	37	16
1894	46	17
1895	55	19
1896	102	26

MICROSCOPIC INSPECTION OF PORK—COST.

The following table shows the exports of microscopically inspected pork, 1892–1896:

Fiscal year.	To countries requiring inspection.	To countries not requiring inspection.	Total.
	Pounds.	*Pounds.*	*Pounds.*
1892	22,025,698	16,127,176	38,152,874
1893	8,059,758	12,617,652	20,677,410
1894	18,845,119	16,592,818	35,437,937
1895	39,355,230	5,739,368	45,094,598
1896	21,497,321	1,403,559	22,900,880

The exports for 1895 were unusually heavy, but if we compare 1896 with other years it will be seen that this year's shipments to countries requiring the inspection were greater than in 1893 and 1894. The shipment of microscopically inspected pork to countries not requiring this inspection has been intentionally discouraged upon grounds of economy.

There were 469,025 carcasses and 510,355 pieces examined, making a total of 979,380 specimens inspected by the microscopical force. Eleven thousand one hundred samples contained trichinæ.

The cost of this inspection was $60,485.93, an average cost per specimen of 6.18 cents.

Last year the number of specimens examined was 1,910,415 (almost double the number this year), and consequently the average cost was less, being 4.9 cents; in 1894 it was 6⅝ cents, and in 1893 it was 8¾ cents.

The cost of the microscopical inspection per pound of inspected meat exported was 0.264 cent; in 1895 it was 0.2 cent, and in 1894 0.248 cent.

NOTE.—The cost per pound, as given above, was obtained, as heretofore, by dividing the cost of the work during the year by the number of pounds exported. This method is objectionable, because the true average cost per pound can not be found by it, for the reason that the meat examined during one month may not be exported for several months. To illustrate this point: During the first six months the cost was $19,848.92; pounds exported, 10,492,180; last six months, cost, $40,637.01; pounds exported, 12,408,700, making an average of 0.19 cent for the first period and 0.33 cent for the last. From this it would seem that the meat examined during the latter part of the fiscal year was intended for shipment during the next year.

INSPECTION OF VESSELS AND EXPORT ANIMALS.

There were during the year 819 clearances of vessels carrying cattle and sheep. All of these vessels were carefully inspected as to fittings, space, and other accommodations for live stock before a clearance would be authorized. The number of certificates of inspection of export animals issued was 1,393.

Below is a statement showing the inspection of domestic cattle and sheep for export and the number exported for 1896 and previous years:

Fiscal year.	Cattle.				Sheep.		
	Number of inspections.	Number rejected.	Number tagged.	Number exported.	Number of inspections.	Number rejected.	Number exported.
1896	815,882	1,303	377,639	365,345	733,657	893	422,603
1895	657,756	1,060	324,339	324,299	704,044	179	350,808
1894	725,243	184	360,580	363,535	135,780		85,809
1893	611,542	292	280,570	289,240			

During the year the number of Canadian cattle exported from American ports was 1,482; number of Canadian sheep, 10,512. Last year there were 1,834 cattle and 38,873 sheep from Canada.

The percentage of loss in the shipments of cattle and sheep to London, Liverpool, and Glasgow, where inspectors of this Department are stationed, is about half that of last year. The number of cattle inspected after landing was 348,833; the number lost in transit was 1,107, or 0.32 per cent, against 0.62 per cent last year and 0.37 per cent in 1894. The number of sheep inspected was 389,534, and 4,587 were lost on the voyage, a percentage of 1.16, compared to 2.7 in 1895 and 1.29 in 1894.

The cost of the export inspection and the Texas fever work, which includes the inspection of live stock imported from Mexico, was $107,273.07. Taking half of this sum as the amount chargeable against the inspection of animals for export, the cost of inspecting the 787,948 cattle and sheep exported would be $53,636.54, or 6.8 cents per head. Last year the average was 7.74 cents, and in 1894 it was 10.75 cents per head. The number of individual inspections made on these animals was 1,549,539 in this country and 738,367 in Great Britain, a total of 2,287,906. This gives an average cost of 2.34 cents for each inspection, against 2.66 last year.

SOUTHERN CATTLE INSPECTION.

During the quarantine season, from February 15 to December 1, 1895, 47,082 cars, containing 1,224,715 cattle, from the infected district were received and inspected at the quarantine pens in the various stock yards, and 45,390 cars were cleaned and disinfected under supervision of the inspectors.

Orders issued by the Secretary of Agriculture modifying the regulations governing the importation of live stock admitted cattle from Mexico, after inspection, for immediate slaughter or for grazing below the quarantine line, subject to the regulations applying to the native cattle of the infected district. Under these orders there were 219,814 Mexican cattle imported and inspected during the year.

INSPECTION AND QUARANTINE OF IMPORTED ANIMALS.

The number of animals imported and quarantined during the year was as follows:

Quarantine station.	Cattle.	Sheep.	Swine.
St. Denis, Md		45	
Garfield, N. J	54	265	22
Littleton, Mass		7	8
Vanceboro, Me	1		
Newport, Vt	10		
Buffalo, N. Y	380		
Port Huron, Mich	10		
Total	455	317	30

There were also at the Garfield station 12 camels, 1 goat, and 1 deer, making a total of 816 imported animals held in quarantine for the prescribed period.

The number of animals imported from Canada and inspected not subject to quarantine was 317,038 sheep, 216 swine, 151 cattle, and 2 deer. There were also inspected 2,168 sheep, 42 hogs, and 3 goats imported from Mexico.

For the purpose of comparison the following table is given:

Table showing the number of animals inspected for abattoirs having inspection.

Fiscal year.	Cattle.	Calves.	Sheep.	Hogs.	Total.
1891	83,891				83,891
1892	3,167,009	59,089	583,361		3,809,459
1893	3,922,174	92,947	870,512		4,885,633
1894	3,862,111	96,331	1,020,764	7,964,850	12,944,056
1895	3,752,111	109,941	1,344,031	13,576,917	18,783,000
1896	4,050,011	213,575	4,710,190	14,301,963	23,275,739

PRODUCER SHOULD PAY COST OF INSPECTION.

In the interests of public health there should be Government inspection of all animals intended for human food and of all meat products prepared for consumption in the United States and abroad. The protection of the health of its citizens is an unquestioned function of Government. But when the assurance of such protection is given by a Government certificate to be placed upon the product of any slaughterhouse or butchering establishment, it enhances the value of that product by creating a demand for it which uninspected meat does not enjoy. Therefore the Government certificate of inspection declaring any meat or other food wholesome and edible enhances its value over that which is not certificated. For this enhancement, which the producer charges up to the consumer, the producer ought to pay.

It is not the duty of the Government to maintain the Bureau of Animal Industry at great expense to all the people in a manner to

give direct pecuniary benefits to only the few who produce and prepare meats for market. For this reason it is urged that the law relative to meat inspection should be so amended as to have the work carried on carefully and efficiently by the agents of the Bureau of Animal Industry, and the cost of inspection assessed against all those whose meats and other animal products are inspected and stamped as wholesome. It is generally admitted that the market price of inspected meats runs from one-eighth of a cent to 1 cent per pound higher than that of meat of apparently the same quality which has not been inspected and certificated. This proves the value in public estimation of governmental supervision and inspection, and as the consumer gladly pays the enhanced price it is only fair that the producer should pay for the work which caused that price. The moment the Government demands pay for its services from those to whom they are rendered meat inspection will become universal at the great slaughtering centers of the United States.

Many of the larger proprietors and packers have signified their willingness to have their animals, meats, and meat products rigidly inspected and passed upon by Government agents at their own expense. They wisely say: "The consumer will pay for it at last."

From the foregoing it is reasonable to conclude that a properly drafted statute might make the Bureau of Animal Industry not only self-sustaining, but also a legitimate source of internal revenue, without doing injustice to either producers or consumers and without putting any appreciable burden upon either.

THE CATTLE AND MEAT TRADE OF GREAT BRITAIN.

The people of Great Britain consume annually about 109 pounds of meat for each person, and 75 per cent of that meat is produced in the United Kingdom. The remaining 25 per cent of the meat food of the United Kingdom is imported. During the fiscal year 1896 120,000 tons of live animals have been taken into the United Kingdom. In addition to that, there were imported 110,000 tons of fresh meat, either chilled or frozen. Besides the latter, 43,000 tons of salted meat were received by the English. During the same period of time the home product of meat was 827,000 tons. Thus the total consumption for the year in the United Kingdom was 1,100,000 tons.

There is a constant increase of the live-stock trade with Great Britain. The English prefer the live animals rather than their carcasses. The reason for this is found in the freight charges. Ships which have been fitted up for cattle, swine, and other animals can return with merchandise of all sorts for freights; but the refrigerated ships—those which take chilled and frozen beef to Europe—are not adjustable for other freights on the return voyage and have therefore to come home in ballast. The consequence is that the advantage of a lesser freight for chilled and frozen meat than for live cattle is

more than overcome by the fact that there is frequently no opportunity for paying return cargoes.

In addition to that, there is an insurmountable prejudice on the part of the British consumer against carcasses slaughtered in other countries and shipped to England as chilled or frozen meats. The Englishman prefers to see the animal alive and to have it slaughtered in England.

The United Kingdom imported during the last year 31,000 tons of live mutton. During the same period frozen or chilled sheep carcasses were taken amounting to 119,000 tons, salted mutton 24,000 tons, while there were produced 356,000 tons of mutton within the United Kingdom, making a total production and consumption during the year in Great Britain of 530,000 tons.

It will be observed that frozen-mutton shipments are far larger in proportion to the live-sheep shipments than the live cattle are to the *chilled-beef shipments. Nevertheless there is a distinct tendency* toward increasing shipments of live sheep, notwithstanding the great distances of the chief centers of supply from the English market.

The live meat arriving in the United Kingdom during the first six months of the year 1896 was supplied as follows: By the United States, 75.10 per cent of the cattle and 45.26 per cent of the sheep; Canada, 9.10 per cent of the cattle and 3.27 per cent of the sheep; Argentina, 15.50 per cent of the cattle and 50.60 per cent of the sheep; while all other countries furnished 0.30 per cent of the cattle and 0.87 per cent of the sheep.

During the same period of time, ending June 30, 1896, dead meat was supplied to the United Kingdom in the following proportions: The United States supplied 81.30 per cent of the beef and other countries 18.70 per cent. Germany supplied 0.22 per cent of the mutton; Holland, 4.20 per cent; Argentina, 26.53 per cent; Australasia, 69 per cent, and other countries, 0.05 per cent.

SHEEP AND CATTLE FROM ARGENTINA.

Argentina, it will be noticed by the table of live animals, shipped a larger proportion of sheep than the United States, and at the same time the Argentine shipment of cattle exceeds that of Canada. It is a thirty days' voyage from Argentina to British ports. There is, therefore, a considerable waste in weight, much loss of animals by death, and enhanced freight charges, but the British public demands live animals and this demand overcomes the increased cost of freight and the consequent enhanced price to the consumer, which is willingly paid. A mutton carcass killed in England brings about $4 more than the same quality of mutton which has been killed abroad and is taken into that market frozen. Shipments of live sheep from Argentina have been very satisfactory to English consumers.

Cattle from Argentina are inferior to those from the United States.

They are not as large, well graded, or as well fattened. There is, however, a constant improvement in Argentinian herds, because they are steadily introducing the best thoroughbred bulls from England, France, and the United States. The breeds most sought for by Argentinian cattlemen are the French Durhams, English Shorthorns, the Hereford, and Scotch Aberdeen Angus. And while the stock growers of Argentina are thus improving their cattle they are not unmindful of their sheep flocks, but are constantly introducing among them Romney Marsh, Leicester, Oxford Downs, Shropshire, and Lincoln rams.

WHOLESALE PRICES OF DRESSED MEATS IN LONDON.

The following table shows the average wholesale prices of dressed meats at the London Central Meat Market during the years 1895 and 1896, per 100 pounds:

Average wholesale prices of dressed meats at the London Central Meat Market, 1895-96.

[Per 100 pounds.]

Product.	First quarter, 1896.	Second quarter, 1896.	Third quarter, 1896.	Year 1895.
	Dollars.	*Dollars.*	*Dollars.*	*Dollars.*
Beef:				
Scotch short sides	11.50 to 12.37½	12.12 to 13.12	12.12 to 13.50	12.87½ to 13.62½
Scotch long sides	10.50 to 11.25	10.75 to 11.25	11.37½ to 12.25	11.50 to 12.12½
English prime	10.50 to 11.25	10.50 to 11.00	10.50 to 11.25	11.25 to 12.12½
Cows and bulls	5.00 to 8.00	5.00 to 8.00	5.25 to 7.50	6.75 to 9.25
American—				
Birkenhead killed	8.50 to 9.25	8.25 to 9.25	8.50 to 10.25	10.00 to 10.75
Deptford killed	8.50 to 9.50	8.00 to 9.50	8.50 to 9.50	10.00 to 11.00
Refrigerated hind quarters	9.00 to 10.00	9.50 to 10.50	10.00 to 11.00	10.75 to 12.12½
Refrigerated fore quarters	5.75 to 6.25	5.00 to 6.00	4.75 to 5.50	6.50 to 7.50
Argentina	6.50 to 8.25	6.50 to 8.00	6.00 to 7.00	8.75 to 10.25
Australian—				
Frozen hind quarters	4.75 to 5.25	5.25 to 5.75	5.50 to 6.50	6.50 to 7.00
Frozen fore quarters	4.00 to 4.25	3.50 to 4.00	3.00 to 3.25	4.75 to 5.00
Mutton:				
Scotch prime	12.12½ to 12.37½	12.37½ to 14.00	12.12½ to 14.62½	14.37½ to 15.37½
English prime	11.50 to 13.12½	11.75 to 13.37½	11.00 to 13.37½	13.37½ to 14.62
Ewes	8.25 to 10.00	8.25 to 10.25	10.00 to 10.25	10.25 to 11.50
German	10.25 to 11.25	11.75 to 12.50		12.12½ to 13.12½
New Zealand frozen	6.25 to 7.75	5.50 to 6.75	6.00 to 7.25	7.90 to 7.75
Australian frozen	4.50 to 5.00	4.25 to 4.50	5.00 to 5.75	5.50 to 6.00
River Plate frozen	4.25 to 5.00	4.25 to 5.00	5.25 to 5.75	5.50 to 6.00
Lamb:				
English	18.25 to 22.00	16.50 to 19.50	14.00 to 16.50	16.62½ to 19.25
New Zealand frozen	10.50 to 12.37½	8.75 to 10.00	9.00 to 9.50	8.50 to 10.00
Veal:				
English	14.00 to 16.00	11.25 to 13.75	10.75 to 13.25	12.37½ to 14.25
Pork:				
English small	9.00 to 10.00	9.00 to 10.75	8.25 to 9.25	10.00 to 11.00
English medium, large, and foreign	7.00 to 8.75	7.00 to 8.50	7.00 to 7.75	8.00 to 9.50

HANDLING OF FROZEN MEATS.

Each year there is visible improvement in the methods of defrosting meats in European markets. Frozen mutton from the Antipodes and from Argentina reaches the retail butcher shop in better form and appearance than formerly. This great industry has been developed under adverse conditions to shippers, because of their inability to obtain fairly remunerative prices. First-class English butchers will not handle frozen meat at all in some of the larger cities. It is, therefore, relegated to small shops in cheap neighborhoods where low prices obtain. All efforts upon the part of shippers and sellers have failed to break down English prejudice against such meats. They do not, therefore, in the form of frozen mutton or frozen beef seriously compete with the live shipments of cattle from the United States. But they do really compete with cheese, bacon, and pork.

LIVE-SHEEP SHIPMENTS.

The growth of the live-sheep shipments is interesting. The United Kingdom took during the year 1893, 62,682; in 1894, 484,597; in 1895, 1,065,470, and during the first nine months of the year 1896, 614,855 head. This slight falling off for the present year is owing to the compulsory slaughtering on landing and consequent impossibility of fattening the sheep on English pastures. In previous years foreign sheep were pastured in Great Britain, and, after being fitted for market, sold at top prices as English.

The enormous imports of beef and mutton to the United Kingdom are an absolute necessity. Domestic production lacks that much of supplying the demand. The utmost capability of meat production has probably been reached in the United Kingdom, but the population continues to augment and the per capita consumption of meat increases with each year. Nevertheless, the imported animals and meats are looked upon with suspicion by the Government, with jealousy by the farmers, and with mistrust by some of the consumers.

From January 1 to September 30, 1896, Great Britain received a greater number of cattle than ever before taken in during a period of nine months. It even exceeded the number taken in during the same period of the year 1894.

The business of supplying the English market with meats is full of risks and vicissitudes, and therefore requires large capital. This whole trade is concentrated at present in a very few hands. The number of shippers from the United States may be counted upon one's fingers. During the first eight months of the year 1896 the business has been unsatisfactory and only barely remunerative. Prices have advanced considerably with the progress of the year, especially for top cattle of prime quality.

Cattle were sent from the United States to Liverpool during the early autumn at $6.08 a head freight. Charges from the River Plate

were $25.55 a head in the early part of the present year, but were reduced to $15.81, and even to as low a figure as $14.60, during the present autumn. Lowering rates stimulated shipments. Great Britain furnishes, as a rule, between the months of May and September, enough native stock to lower prices of American and other imported cattle.

Among the parliamentary enactments of 1896 was a bill for compelling the slaughter of all animals at the point of debarkation. This act, however, made no change in practice, as, under departmental orders, such slaughtering had been carried on for some years.

QUALITY OF COMPETING CATTLE PRODUCTS.

Cattle from the United States have for a long time been arriving at English ports in such perfect condition that there is neither need nor desire to further fatten them before killing. It is not the same with Canadian cattle. Evidence from agents of the United States Department of Agriculture from Birkenhead, from Glasgow, and from Bristol is concurrent to the effect that the quality of animals from the United States is far superior to that of those received from Canada. At all the points named Canadian cattle have been found short in weight and poor in quality. The same fault is found with animals from South America. Corn-fed animals from the United States have, however, proved very superior and achieved some notable triumphs during the year. About one-third of the South American cattle shipped to London and Liverpool in 1896 from the River Plate were sold at from 5 cents to 6 cents per pound.

These were mostly wild pampas cattle which suffer very much on the voyage over the ocean and do not begin to feed until half the distance to Liverpool is covered. Nevertheless there are quite a number of River Plate cattle bred specially for British markets, and pastured and afterwards stall-fed after the American method, and these are said to compare favorably with the cattle from the United States as to weight and quality. South America has shipped animals of such inferior quality at times as to have made great loss, and it is clearly proven that it pays to ship only the very best grades and quality of beef cattle to the United Kingdom.

The present prospect for good prices for American beef in the English market is not encouraging. Supplies are abundant and low freights prevalent. Under these circumstances only moderate profits may be hoped for in the future, even if the English market retains a healthy tone and steady demand.

The exclusion of United States and all other foreign cattle from the Continent forces practically all of the surplus of the United States into Great Britain and tends to keep prices down for the English consumer.

During the last twelve months American cattle have uniformly

arrived on the other side in good health and condition. Only forty or fifty head were condemned at Glasgow as suffering from Texas fever. It would perhaps be of advantage to American shippers to especially study the Glasgow market. In that city cattle from the United States compete with the very highest quality of British animals. During the year 1896 it has been admitted that American cattle have been the best of all those landed at that port. They arrived in good condition in winter as well as in summer and their quality is admittedly very superior. The Glasgow people seem to have a preference for animals shipped from Baltimore, which are mostly Shorthorn crosses, though in the autumn quite a large number of Polled Angus cattle arrive there. Light-weight, smooth-finished steers during the warm months of summer will pay the shipper the best profits in the Glasgow market. It has been shown to the Department that the highest prices and the highest praises have been bestowed upon beef from the United States in the Glasgow markets during the year 1896, but it must be admitted that those meats were sold as "prime Scotch" or "English" joints.

Prices of many American cattle are lowered because of the deep branding on their hides. It has been estimated that 10 per cent has been deducted from the value of some animals because of the branding upon them.

MEAT IMPORTED BY GREAT BRITAIN.

The meat producers and packers of the United States can learn from the following tables the quantity of meat taken into the United Kingdom of Great Britain, and also the sum total of the aggregate which has gone from this country during the last four years and the three first quarters of the year 1896:

Quantity of meat imported into the United Kingdom during the four years 1892–1895, and nine months of 1896.

[Figures given are for thousands, three ciphers (000) being omitted.]

Meat product.	1892.	1893.	1894.	1895.	1896 (9 mos.).
Bacon:	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*
From United States	2,896	2,177	2,562	2,649	2,070
From other countries	985	1,022	1,128	1,414	1,353
Total	3,881	3,199	3,690	4,063	3,423
Beef:					
Salted—					
From United States	267	188	235	212	180
From other countries	8	13	7	8	5
Total	275	201	242	220	185
Fresh—					
From United States	1,952	1,490	1,775	1,649	1,548
From other countries	128	318	329	542	332
Total	2,080	1,808	2,104	2,191	1,880

Quantity of meat imported into the United Kingdom, etc.—Continued.

Meat product.	1892.	1893.	1894.	1895.	1896 (9 mos.).
Hams:	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*	*Cwt.*
From United States	1,131	921	1,075	1,203	984
From other countries	122	67	55	86	133
Total	1,253	988	1,130	1,289	1,117
Meat, unenumerated:					
Salted or fresh—					
From United States	21	22	34	37	42
From other countries	130	156	156	200	165
Total	151	178	190	237	207
Preserved otherwise than by salting—					
Beef	569	386	291	471	284
Mutton	68	84	113	200	106
Other sorts	163	121	150	185	142
Total	800	591	554	856	532
Mutton, fresh:					
From Holland	165	197	200	167	122
From Australasia	977	1,187	1,440	1,672	1,451
From Argentina	471	516	586	715	608
From other countries	87	71	70	57	6
Total	1,700	1,971	2,296	2,611	2,187
Pork:					
Salted (not hams)—					
From United States	162	111	150	123	99
From other countries	66	76	75	97	94
Total	228	187	225	220	193
Fresh—					
From Holland	92	120	134	249	143
From Belgium	23	25	31	27	17
From other countries	17	37	16	12	
Total	132	182	181	288	167
Rabbits:					
From Belgium	89	83	86	86	48
From other countries	19	21	22	34	53
Total	108	104	108	120	101
Total meat	10,608	9,409	10,720	12,095	9,992

NOTE.—Cwt.=112 pounds.

BRITISH IMPORTS OF LIVE ANIMALS.

In connection with the foregoing, the appended table (p. 27) shows how many oxen, bulls, cows, and calves have been landed in Great Britain from foreign ports during the same period of time.

Number of live animals (for food) imported into the United Kingdom in the years 1893, 1894, 1895, and the first nine months of 1896.

Animals.	1893.	1894.	1895.	1896 (9 months).
Oxen and bulls:				
From Canada	81,232	80,450	95,747	71,670
From United States	248,825	381,657	276,307	308,159
From other countries	7,006	9,687	41,283	56,394
Total	337,063	471,794	413,337	436,223
Cows:				
From Canada	1,690	1,868	234	1,673
From United States	66	265	31	161
From other countries	1,152	1,380	1,615	1,069
Total	2,908	3,513	1,880	2,903
Calves:				
From Canada	3	5	12	1
From other countries	71	128	336	161
Total	74	133	348	162
Oxen and bulls	337,063	471,794	413,337	436,223
Cows	2,908	3,513	1,880	2,903
Calves	74	133	348	162
Total cattle	340,045	475,440	415,565	439,288
Sheep and lambs	62,682	484,597	1,065,470	614,855
Swine	138	8	321	1

AMERICAN SHEEP IN ENGLAND.

American sheep during the year 1896 have been landed in Liverpool in greater numbers than during any preceding year. They have consisted largely of corn-fattened muttons, and nine-tenths have been of superior quality.

The profitable market for mutton in England appears to have encouraged sheep growing and fattening in many of the Western States. Although prices fluctuate considerably, being regulated by the supply and prices of native English mutton, there is, as a rule, only a difference of about 3 cents per pound between the best English and the best United States mutton. This is not because of English prejudice against the American article, but because many of the sheep from the United States, having been rapidly fattened on corn prior to shipment, show sometimes 80 per cent of their added weight to be tallow, while the flesh (Englishmen declare) is flavored by the corn feed.

American yearlings and 2-year olds command practically the same price as English sheep of the same age and quality, and have sold during the present year at from 14 to 16 cents per pound.

It was, however, the misfortune of American shippers, notwithstanding the increased vigilance and rigor of the inspection of animals

for export, to have landed during the year 1895-96 a few lots of sheep in Liverpool and London affected with the scab. It is quite possible that this disease was generated by infected ships upon which diseased sheep had been sent from Argentina and other countries, and then, without proper disinfection, had been put into the carrying trade between the United States and Europe. It is, however, believed that if sheep are wet and crowded during a voyage scab may be generated by those conditions.

The Glasgow market finds fault with American sheep, and also with Canadian, by declaring them too big and too fat. The Scotch want medium weights, and for them will pay high prices. Foreign markets demand some other breed of sheep for mutton than the Merino and its crosses, and those looking to profitable ventures in this line should secure the best mutton breeds of sheep, which, when they are landed in as good condition as American cattle, will soon have as high a reputation and bring as remunerative figures.

IMPORTS OF HOG PRODUCTS.

Great Britain continues the largest purchaser and importer of swine flesh and hog products in the world.

In 1893 British consumers took from foreign countries 3,000,000 hundredweight, over 3,500,000 hundredweight in 1894, more than 4,000,000 hundredweight in 1895, and nearly 3,500,000 hundredweight during the first nine months of 1896. This year will, therefore, show a large increase in consumption. It is noticeable that while there was an increase of 800,000 hundredweight in 1895 over 1893 the value fell from $41,250,000 to $38,500,000.

Shipments from the United States of these products are pretty steady and average 2,500,000 hundredweight a year. American packers are not participating in the profits of the growth in consumption of swine flesh and hog products in Great Britain as much as they ought to, because they do not cure meats especially suited to the English demand. But their Danish and Canadian competitors are increasing their shipments into the United Kingdom every year. This is because the packers of Denmark and Canada are carefully catering to the taste of the English consumer. Eighty per cent of the entire Danish product finds market in England. The cost of swine at the packing houses in Denmark is given at 6 cents a pound live weight, with a dockage of 20 per cent on refuse, together with 28 pounds of bone. The freight on the product to London is only $7.30 per ton, and the price realized is about $11 per 100 pounds.

Irish packers are more damaged by Danish competition than are those of the United States, and the great abattoirs of Ireland are advocating improvement in breed of swine for that country, and also in the methods of curing the meat for market.

GROWTH OF DANISH PACKING BUSINESS.

An indication of the growth of the Danish packing business and its possible effect upon competitors in the English market is submitted from the Ulster Curers' Association, and reads as follows:

Prior to 1886 the bacon-curing industry was practically unknown in Denmark. Since that time the Danes have not only learned the business of curing so as to please the most fastidious English markets, but have introduced from England and established a breed of pigs exactly suited to the wants of the curer in point of leanness, with the result that the feeder gets the utmost price possible from the curer, and his loss through raising overfat, unsuitable meat is reduced to an absolute minimum. In other words, rearing and feeding of pigs are conducted on scientific principles. Success has been achieved through the dissemination through the agricultural districts of Denmark of the knowledge of trained experts acting with State aid and under State supervision.

Grants have been made by the Danish Government, through the Royal Danish Agricultural Society, for the purchase in England of swine of the best breeds and most suitable for crossing with the native stock for the production of pigs for curing purposes. The disbursement of the money granted has been in the hands of experts, who made frequent visits to England, purchasing stock from the best-known pedigree herds of the country. In addition to the money thus expended, the Danish Government adds subventions to railway and steamship companies, and supports experts qualified to instruct the bacon factors in the better preparation of their product for the English market.

LOW PRICE OF AMERICAN BACON IN ENGLAND.

Our bacon sells for less money in the English market than that of any other country. The reason for this is found in its overfatness and saltness. When bacon prices are depressed, the lower grades are proportionately more depressed than the higher. Therefore American bacon ranges from about 2 cents per pound wholesale below Continental and Irish bacon and about 3 cents below English bacon. American bacon in the English market will bring a better price when it is prepared with a view of meeting the tastes and demands of English people. But to-day American packers merely dump their overflow product upon the English market for what it will bring, and leave the higher prices to English, Canadian, and Danish packers.

American hams are held in higher estimation than bacon and hold their own in competition with all other countries, so that in quantities shipped and in prices hams and pickled pork from the United States are equal to the same products from other countries.

AMERICAN HORSES IN ENGLAND.

In the year 1893 Great Britain took 13,707 American horses. In 1894 the same purchaser received from the United States 22,866 horses, and in 1895, 34,092. But during the first nine months of the year 1896 there had been shipped from the United States to England 34,642

head of horses. Shipments by Canada have increased during the same period of time in about the same proportion, while shipments from the Continent of Europe have fallen off materially; so that it may now safely be claimed that the United Kingdom looks to America for all the horse supply which she once purchased principally from Germany.

American horses are now in steady demand for omnibus, street-railroad, and cab services, and for the use of traders who keep drays, vans, and carts for the collection and delivery of goods. English breeders are turning their attention chiefly to hacks, hunters, and heavy draft horses. Large, compactly built, healthy draft horses are high in price, with a constant market. The demand for these animals is on account of the omnibuses, cabs, and trucks, and those from the United States are growing in favor. The strongest recommendation for American horses is their staying qualities—their powers of endurance. Horses suited to cab work bring from $55 to $100. A better class of animals commands readily from $125 to $150, and the average price is not below or above those figures.

Draft horses from the United States are in great demand and the trade in this style of animals may greatly develop, as the American draft horse is regarded as of better action and life than most of the native breeds. During the summer of 1896, in English markets, these animals have sold at $250 to $280 a head, but they were of first-class quality. The veterinary superintendent of the city of London commends the American stock of horses in that market very highly. All horses from the United States and Canada are inspected under the direction of the British Board of Agriculture upon their debarkation at any English port, and thus far during the year 1896 the sanitary condition of animals landed has been reported very good.

AMERICAN APPLES IN ENGLAND.

The season begins in England for apples in August, when the domestic crops come into the market. At this time the stores are full of other fruits, and apples are comparatively neglected and bring low prices. It sometimes happens that a very large crop in Spain and Portugal will result in limited shipments to England during August and September, but with this occasional exception the supplies are confined to the home product. The Spanish and Portuguese apples are of inferior quality, and bring only the moderate price of from $1 to $1.75 per hundredweight of 112 pounds. The bulk of the English apples in average years would sell at about the same rate, superior kinds bringing much higher prices. In ordinary seasons English apples are to be seen in the English markets up to the end of January. In 1896, however, the crop was deficient both in quantity and quality, and was practically used up by the beginning of October. The market was thus left clear for United States and Canadian fruit, which is the chief, indeed practically the only, source of supply during the

winter. As usually happens, our earlier shipments were not representative in quality, and brought low prices.

Our packers send their fruit forward in barrels which net as a rule not quite 100 pounds. Our European agent has heard complaints that there is a tendency toward a decrease in the size of the barrels, and this is a mistake from a business point of view. The Canadian barrels weigh gross about 1½ hundredweight (say 168 pounds) and net 130 to 140 pounds. When people see Canadian Baldwins quoted at $2.50 to $3.25 per barrel and United States Baldwins quoted at $2 to $3, they are apt to consider this evidence of superior quality and higher price for the Canadians. It is, however, merely the difference in the weight of the barrel.

PREFERRED VARIETIES.

The big bulk of the shipments consists of the Baldwins, Northern Spy, and Greenings. Our Baldwins are finer and larger than the Canadians, but they are not so hard and not such "good keepers." They range as a rule from $2.50 to $3.50 for Canadian barrels, and $2 to $2.75 for American. It is not believed in England that these prices will be quite established during the winter of 1896-97 on account of the immense crop reported to have been gathered in the United States and Canada.

The Greenings are not so attractive in appearance, but they have a firm hold on the English market for cooking purposes, more especially in the north. Good, clear, unspotted Greenings bring in the ordinary season from $2.50 to $3.50 per Canadian barrel, an extra price being paid for large apples. Special importance is attached to size in the case of Greenings; buyers willingly pay enhanced prices for large specimens, as a rule cooking them in the form of dumplings. Small Greenings would easily fall off a dollar a barrel in price, and thus render the shipment unremunerative.

Northern Spys usually bring about the same prices as the Baldwins.

Freights to London, Liverpool, Glasgow, or Bristol are approximately $1 per barrel, and all charges, including auctioneer's commission, would be covered by 25 cents. All apples are sent on consignment to brokers who effect sales by auction. The business is cash on delivery, and if the auctioneer gives credit it is at his risk, and not at that of the seller. The Department representative in England is prepared to give inquirers the addresses of respectable consignees in the principal seaports of Great Britain.

The Spitzenberg is a good, reliable apple, appreciated in the English market, and it brings about the same price as the Baldwin. Indeed, nearly all red-colored apples bring about the same prices.

Russets are liked and sell at about the price of the Baldwin. Golden russets, if carefully selected, would bring from 50 to 75 cents over the average. The tendency with golden russets arriving in England is,

however, toward such a small size that they do not make over average prices. The Roxbury russet is also a favorite.

Apples of superior varieties, like Newton or Albemarle pippins, and superior apples of ordinary varieties, may be depended upon to bring their value. Twenty-ounce pippins, Cranberry pippins, "Kings," and Ribstones, for instance, of large size and good color, would range from $3.25 to $4.50 per Canadian barrel, when good Baldwins were selling for $2.50 to $3.25.

SUGGESTIONS TO SHIPPERS.

Any apple of good color and fair size will sell in England if sound, but the profit is made in sending something better than the average. It costs no more to send a fine barrel of apples across the Atlantic than to send a medium barrel, and the return is better. The utmost care should be taken in the selection of the fruit. "If you discard a shilling's worth in packing, you may better your price 2 shillings," is the saying of a London broker. The fruit should be so packed that it can not shake together. It should arrive tight. If buyers find a barrel that rattles, it wlll reduce values from 25 to 50 cents, even though the contents be entirely uninjured. On the other hand, care should be taken that the fruit be not pressed too tight, for if the top layer is bruised or unduly flattened it reduces the price from 50 cents to $1. A few consignments have reached England in boxes from time to time, but there is no apparent advantage in boxing, though Tasmanian apples are thus forwarded. In a good season "fancy brands" of apples of exceptional quality and appearance might perhaps be advantageously shipped in small boxes, but the fruit must be very special or the enhanced cost of the small boxes is not recouped.

ECONOMICS FOR THE FARMER.

Agricultural colleges and experiment stations are teaching the science of agriculture. But they are not generally teaching farm economics and the importance of markets. Science is constantly showing the farmer how to increase the annual product per acre in cereals and other staples, but the great question confronting each tiller of the soil is, how to secure satisfactory remuneration for the results of his toil. In view of this, it is a legitimate function of the Department of Agriculture to place before the farmers of the United States as many facts and figures relative to markets as it is possible to obtain.

WORK OF THE SECTION OF FOREIGN MARKETS.

In furtherance of this design, the Section of Foreign Markets was organized on March 20, 1894, for the purpose of collecting and disseminating information calculated to assist in securing a more extended market abroad for the agricultural products of the United States.

The work of the section, with this object in view, is twofold in character. It comprises not only the publication of a regular series of bulletins and circulars, but also the furnishing of information in response to special inquiries. Eight bulletins relating to as many different countries, viz, the United Kingdom of Great Britain and Ireland, the German Empire, France, Canada, Netherlands, Belgium, Norway, and Sweden, have already been issued, and bulletins upon Denmark and Mexico are now in course of preparation. Each country is treated with a view to its possibilities as a customer of the United States.

The natural resources of the country are described in some detail, and also the character and extent of the leading productive industries, but more especial attention is given to the subject of foreign commerce. A detailed statement of the principal articles of merchandise imported and the various sources from which they are received is presented, together with such information regarding customs duties and regulations, equivalents of foreign weights and measures, rates of exchange, etc., as may be of service to American producers seeking a foreign market for their products. Appended to each bulletin is a series of reports received through the medium of the State Department from our consular representatives abroad. These consular reports are designed to set forth such opportunities as exist for increased trade with the United States, and they frequently contain information of great value to American exporters.

In addition to the bulletins described, the Section of Foreign Markets has thus far issued ten special circulars upon subjects affecting our foreign commerce. The statistical data presented in the bulletins and circulars of the section are derived as far as possible from the official publications of the countries treated, and to render their statistics more readily intelligible, foreign moneys, weights, and measures are converted into their equivalents in the denominations used in the United States.

An important part of the work of the Section of Foreign Markets consists in supplying information in response to the many inquiries that are received relative to the extension of our foreign trade. These inquiries cover a wide range of investigation, and it frequently entails a large amount of labor to supply the information desired. Among the sources of inquiry to which information has been furnished may be mentioned other Departments and offices of the Government, Representatives in Congress, and Congressional committees, boards of trade, chambers of commerce, and other commercial and agricultural organizations, and newspapers and periodicals devoted to agriculture or trade.

The numerous requests for information received by the section and the large demand for its publications serve in a measure to indicate the importance of the work that it is attempting to perform. The

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rapid development of the agricultural resources of the United States has resulted in an annual production far in excess of the consuming capacity of our population. To such a degree has the surplus increased that its disposal is fast becoming a grave problem. The logical solution lies in the extension of our markets beyond the sea. To accomplish this in the face of the keen competition that other great producing countries are prepared to offer, an accurate and thorough knowledge of the conditions to be met is quite essential. The investigation of these conditions and the diffusion of the information thus acquired comprise the work for which the Section of Foreign Markets was created.

WORK OF THE WEATHER BUREAU.

During the last twelve months marked and valuable improvements have been made in the Weather Bureau. Accurate forecasts of the weather are the most valuable service rendered by this Bureau to the general public. Storm warnings, forecasts of falling temperature, and predictions of other atmospheric changes and phenomena have been very satisfactorily and oftentimes perfectly verified during the past year. More than 10,000 cities, villages, and towns have been added to the list of beneficiaries of the Weather Bureau service in the same time, and expenditures have been less than for any twelve months during the past fifteen years, except one, in which they were substantially the same.

New and ingenious inventions have been furnished to the principal observer stations for the purpose of expeditiously printing, in a more legible manner, the daily Weather Bureau maps which are posted in the leading cities and towns of the country, while the methods for distributing the useful information furnished by the Bureau have been greatly perfected and extended, through the mails, to the smaller villages and post-offices.

A Weather Bureau service especially for the benefit of the cereal growers has also been established, so that now the area producing that staple is served in precisely the same manner as those vast areas which produce cotton.

TIMELY WARNINGS.

Warnings have been heralded and signals displayed throughout the country well in advance of all the cold waves of any intensity which have occurred during the year. The value of such warnings was especially appreciated when the severe cold wave which swept, between January 1 to 5, 1896, from the northern Rocky Mountain region southward to the Gulf of Mexico and eastward over all the States along the Atlantic Ocean was forecasted and afterwards verified. Congratulatory acknowledgments from commercial bodies and from shippers of perishable merchandise indicate a saving through the various storm warnings similar to the above of several millions of

dollars. Warnings of approaching cold waves of intense freezing power enabled owners of perishable property to protect their commodities in time, and the warnings thus rendered inestimable benefit to commerce.

Hurricane forecasts have been given to people along the Atlantic Coast several times and with the best of results to shippers and shipping. Three severe West India hurricanes swept the coast of the United States from Florida to New England and two others passed offshore, but sufficiently near to seriously endanger the craft just leaving port. Twenty-four hours or more in advance of each of these storms, danger signals announced their coming. Not a single vessel was lost, and comparatively little property was destroyed belonging to those who heeded the warnings. On the Great Lakes a similar system has been inaugurated and successfully operated. In the harbor of Buffalo alone during the last winter a total of more than 150 vessels, aggregating millions of dollars in value and having thousands of persons on board, were detained in port by the Weather Bureau forecasts, without which every one of the vessels would have been jeopardized in perilous storms.

No very great floods have occurred in or along our big rivers during the past year, though the sudden melting of the snow at the head waters of the Allegheny caused a moderate freshet in the Ohio River in the latter part of March and in the beginning of April, 1896. A warning, however, had been issued by the Weather Bureau and prevented much loss of property. During July of the last summer unusually heavy rains prevailed in the South and Middle Atlantic States which caused floods in the rivers of Virginia, North Carolina, and South Carolina. From those States the Weather Bureau received reports showing a saving in stock, crops, and merchandise on the lowlands amounting to thousands of dollars, and also stating that vast values of logs and other property on those rivers were likewise saved as a result of the timely admonitions.

The Chief of the Weather Bureau shows in his annual report that the average verification of forecasts during the year was 82.4 per cent. This is an improvement of 2 per cent over the previous year. The Bureau continues its investigations in the science of meteorology. Prominence has been given during the year to the subject of aerial investigations. Much work has been devoted to the development of appliances for upper-air exploration. The future will demonstrate the value of these incursions into the upper strata of the atmosphere.

AGRICULTURAL PUBLICATIONS.

During the fiscal year 376 publications were put out by the United States Department of Agriculture, principally for gratuitous circulation. They aggregated six million five hundred and sixty-one thousand seven hundred (6,561,700) copies. The total number of pages is,

however, less than were contained in the 254 publications of the previous year, and even less than those in the 205 publications of the year 1894. The policy of condensation and abbreviation has been firmly established as to bulletins and circulars issuing from this Department. By a careful and critical editing of the matter sent into the Division of Publications, terseness and lucidity have been stamped upon all agricultural literature disseminated by the Department.

Farmers' Bulletins, two-thirds of which are distributed by Senators, Representatives, and Delegates in Congress, were printed to the number of one million eight hundred and ninety-one thousand (1,891,000) copies, and, of those, one million three hundred and sixteen thousand six hundred and ninety-five (1,316,695) copies were delivered to Senators, Representatives, and Delegates. The average cost of Farmers' Bulletins during the year was 1.3 cents each.

MODIFICATION IN METHOD OF DISTRIBUTING PUBLICATIONS.

The method of distributing Department publications has been materially modified and improved under the act of January 12, 1895. The mailing lists of the Department have been carefully revised. They include now only those who render some reciprocal service, or who, from educational or official position, are entitled to recognition. Besides those persons, universities, colleges, academies, and public libraries receive publications of the Department when they apply for them. Remaining publications not required for distribution by the Department, as above outlined, are transmitted to the Superintendent of Documents. He holds them for sale at prices barely adequate to pay for their printing. Up to June 30, 1896, the number sold by that officer was 2,818.

THE RESTRICTION IN REGARD TO 100 PAGES.

The act referred to is, however, in need of amendments. It limits to 1,000 copies every publication exceeding 100 octavo pages, unless otherwise ordered by Congress. This proviso has seriously interfered with the utility of the Department in its lawful and prescribed duty of disseminating information in accordance with the law creating the Department. Legally, under the present method of distribution, only those persons decided to be properly entitled to them, may receive publications free of charge. Therefore, the thousand copies' limitation is an unnecessary and inequitable restriction, and does injustice to many citizens who are actively and usefully cooperating with the Department for the love of agriculture itself and without pecuniary remuneration.

DISCOURAGEMENT OF PRIVATE ENTERPRISE.

The Public Printer may, under this law, supply at cost to parties asking for them while the work is in press a limited number (not exceeding 250 copies) of any publication. For electrotype plates of

the same he is required to charge an amount sufficient to cover the entire cost, including composition, manufacture of the plates, and 10 per cent additional. These provisions limit the distribution of the publications containing useful information while they save the Government nothing. Such sales ought to be made only upon the approval of the head of the Department and subject to regulations made by the Public Printer; but some method should be adopted by which the publications of the Department of Agriculture, at least, may be indefinitely multiplied without public cost and by private enterprise.

Neither the Department of Agriculture nor the Government itself can continue for the next five years, even, to increase its publications for gratuitous distribution in the same ratio that such publications have increased during the last five years without disbursing many millions of dollars. Many good citizens disapprove of the Government or any Department thereof becoming a competitor with the authors and publishers of books relating to pisciculture, geology, horticulture, entomology, agriculture, and kindred sciences. And it is frequently asked why discriminations should be made and useful literature published by the Government and circulated gratuitously among the people upon a particular line of subjects, employments, and interests, while all other vocations are left to think out and publish their own literature.

NEED OF GREATER ECONOMY.

While the act of January 12, 1895, was presumably designed to effect economy in the work of publications, and while it has to some extent fulfilled this design in the way of limiting the free promiscuous distribution of Government documents, it has in some respects increased rather than decreased expenses. The expense of conducting the branch printing office of this Department under the conditions imposed by the act in question amounts to $16,000 yearly, which is considerably more than twice as much as it has cost previously, and though there has been marked improvement in both the quantity and quality of the work, the increased expense has been disproportionate to the benefits obtained. As regards the economy effected under the act by reason of the restrictions which it permits—and in fact enjoins—in the distribution of public documents, it is discouraging in the extreme to find efforts at economy in this direction neutralized by special appropriations for the printing and free distribution of certain publications, the need for which exists in some cases so little that not a single copy is provided for the use of this Department, notwithstanding the fact that the cost of the work is deliberately added to the appropriations estimated for as necessary by the Secretary of Agriculture. In the act making appropriations for this Department for the current fiscal year, $82,500 was so added for the purpose of printing 60,000 copies each of the Report upon the Diseases of the

Horse and the Report upon Diseases of Cattle, to be given away b Congress.

Strenuous efforts have been made by the present Secretary in behal of economy in this line as well as in others. And yet the increase number of publications have made it necessary to ask for an appro priation for printing in this Department of nearly $100,000, and als for a further increase in the appropriation for the editing, illustrat ing, and distributing of the carloads of matter yearly evolved by th several bureaus and divisions.

GROWTH OF PUBLICATION WORK.

The Division of Publications now embraces the work of distribution Heretofore it included only editing and illustrating. The severa appropriations expended under the direction of Mr. George Williar Hill, chief of this division, aggregate $170,000. The total appropria tion of 1896 is considerably less than 50 per cent over that made fo 1894, while the number of publications issued exceeds this year by 8 per cent those issued in 1894, and the total number of copies is 10 per cent greater. This is sufficient evidence that the appropriation for this division have been carefully, efficiently, and economicall handled, and that the increase of money disbursed is unavoidabl simply owing to the constantly increasing issue of publications b the Department.

In 1891 appropriations for the purposes of publication in the Unite States Department of Agriculture amounted to $87,600. Only 12 bulletins, pamphlets, and other documents were issued, and the tota number of copies printed was 2,384,447. But during the year 189 appropriations of $172,740 paid for the 376 publications, numberin 6,561,700 copies. The increase in expenditure was less than 100 pe cent, the increase in number of publications more than 300 per cent and the increase in the number of copies distributed 175 per cent And during the year 1896 the salary list of the Division of Publica tions, including work of editing, illustrating, and all other office labo involved, has been actually less than it was in 1891.

In view of the foregoing facts, the estimates for the work of th Division of Publications for the next fiscal year must, it is believed commend themselves as reasonable and necessary.

GRATUITOUS SEED DISTRIBUTION BY THE GOVERNMENT.

The contract for furnishing vegetable and garden seeds during th fiscal year 1896 was made with D. Landreth & Sons, of Philadelphia Pa., and that for flower seeds was made with L. L. May & Co., o St. Paul, Minn. Both contracts were let after consultation with an by and with the advice and approval of the chairmen of the Com mittees on Agriculture in the United States Senate and House o Representatives.

The dissemination is tabulated and made explicit by well-considered figures in the report of the special agent who had the matter in charge.

The seeds distributed gratuitously by the Government during the fiscal year closing on the 30th of June last weighed a little over 230 tons. The cost of carrying them through the mails was over $70,000. They occupied 30 mail cars in transportation.

Careful computation shows that the seeds sent out by the Department of Agriculture during the year would have planted 21,038 acres of cabbage, 10,768 acres of lettuce, 10,712 acres of tomatoes, and other garden vegetables in proportionally large areas. Briefly, the seed gratuitously sent about the country would have planted more than 115 square miles of garden. In other words, it would have planted a strip of ground 1 rod in width and 36,817 miles in length. Such a strip would reach one and one-half times around the globe, and a passenger train going at the rate of 60 miles an hour would require 51 days 3 hours and 14 minutes to travel from one end of this gratuitously seeded truck patch to the other.

Each Congressional quota contained seed enough to plant more than 163½ acres.

The 10,125,000 packets of vegetable seeds cost the Government $75,000, while the transportation of the same through the mails added the sum of $74,520, making a total cost directly to the Government of $149,520 for the gratuity, paid for by money raised from all the people, and bestowed upon a few people.

Samples of all seeds sent out were carefully and thoroughly tested by Mr. Gilbert H. Hicks, expert, as to purity and germinative power. A complete record has been kept of all the shipments of blank franks and also of the miscellaneous lots of addressed franks from each Senator and Member of Congress, and receipts have been taken from the postmaster and postal clerk furnished by the Post-Office Department during the shipment of the seeds. Records of the mail packages show by whose orders they were mailed, to whom sent, the post-office address, and the dates they were sent out.

CONTRACTS FOR CURRENT YEAR'S DISTRIBUTION.

For the year ending June 30, 1897, seeds have been contracted for amounting to $130,000 in value. Owing to lower prices, it is safe to say that each Congressional quota will be nearly double what it was in the year 1896. And careful estimates make it obvious that the gratuitous distribution of seed by the Government during the year 1897 will amount, at retail price valuation, to more than $2,000,000. And because of this competition of free seed with the retail seedsmen of the country, an attempt was made recently to enjoin the Department from purchasing seed with the appropriation made at the last session of Congress. But the injunction was denied, and thus the great privilege of gratuitously furnishing garden and flower seeds to

a small per cent of the people out of money raised from the revenues of all the people was conserved to Members of Congress and the officers of the Department of Agriculture. It is estimated that the distribution for this year will be sufficient to plant about 230 square miles of ground, and will therefore employ in the distribution about 60 mail cars.

The Secretary of Agriculture sincerely regrets this unnecessary and wasteful expenditure of public moneys, and hopes that Congress may in good time put a stop thereto.

EXPERIMENT STATIONS.

By authority of act of Congress making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1896, and also in subsequent acts, examination of the work and supervision of the expenditures of the agricultural experiment stations established under act of March 2, 1887, have been made. A report of these investigations has been sent to Congress. It shows that the operations of a majority of the experiment stations have been within the scope and letter of the law. Some stations, however, are still defective in their organization and work. They do not use sufficient care in the expenditure of the funds as provided for by the terms of their organic act.

The expansion of the experiment station enterprise immediately following the passage of that organic act was too rapid to be either wise or deliberate. It necessitated the employment of many officers who had not proper scientific education or experience. Imperfect comprehension of the functions and duties of experiment stations on the part of governing boards and officers intrusted with the management of the stations has in many instances led to misdirected effort; in some to superficial work, and in others to expenditure of the public funds for work not contemplated in the original act.

It was, however, impossible to organize, simultaneously, fifty or sixty new institutions for original scientific research of an entirely novel character without falling into many errors. This criticism, therefore, of misdirected efforts is meant for the few and not for all.

Some institutions have made the error of confusing work and expenditure intended for instruction with that intended for experimentation. Some stations expended large sums of money in what may have seemed experimenting, but was in reality the conduct and maintenance of large farms on which general crops (with, perhaps, some improved methods) were produced.

PROPER FUNCTIONS OF EXPERIMENT STATIONS.

The experiment station was not designed to be a model farm. There is neither warrant in law nor justification in circumstances for making it such.

Another seeming misuse of funds has been brought about by the acceptance of donations of farms from enterprising citizens or from communities upon condition that permanent substations should be established upon them. Such farms have been often accepted without properly considering the nature of the soil of the land donated or the real needs of the locality. Thus much money has been wasted for building and equipments upon farms where only superficial and temporary experiments can be conducted.

In some cases too frequent changes in boards of control, resulting in changes of policy with regard to the station and changes in the station staff, have worked great injury and discouragement. An experiment station's proper management has no possible relation to any political party whatsoever. It should be in the hands of the best experienced and most practical scientists of the State or Territory. It should be permitted to go on increasing its utility and establishing its permanence without political interference.

Some stations have endeavored to cover too many lines of work. Many stations were organized originally as so-called "all-around stations." They had a large staff of officers called "agriculturists," "chemists," "botanists," "entomologists," and "horticulturists." They paid small salaries, and, with few facilities for work, achieved small results. Most of the officers were obtained from the agricultural college faculties. They were allowed very little time from their teaching duties therein, and consequently could not thoroughly conduct experimental investigations. In some cases this practice led to an almost total diffusion and exhaustion of the experimental and station funds. Such stations had no definite aim and organization, and sometimes little administrative ability. Every station should have its own executive head or secretary, like any other department in the college, and he should report to the president or chancellor who represents the controlling board.

FUNDS OF THE STATIONS.

It is regretted that so many of these institutions for higher scientific education in the United States have been limited as to funds with which to make original research; much useful investigation has, however, been carried out by professors connected with them, notwithstanding very limited means, purely from a love of science. Largely this has been accomplished outside of their regular duties and at great inconvenience and expense to themselves personally.

The experiment station act gives the land-grant agricultural colleges $15,000 per annum especially for original research in agriculture. This is equivalent to 5 per cent per annum upon an endowment of $300,000 for each station. And this fund ought to be regarded as a sacred trust and devoted entirely to the advancement of agricultural science through conscientiously directed original research. If this course be pursued in all the institutions, as it has been faithfully

pursued in some, practical agriculture will receive vastly increased benefits. The colleges themselves will be greatly strengthened in resources, and will attract to themselves more and better students of agriculture and allied sciences.

A separate account of the funds bestowed by the National Government should be kept by the accounting officer of every college having an experiment station. Care ought to be taken that neither directly nor indirectly shall any part of this specific trust fund be diverted to general college purposes.

REGULATIONS FORMULATED BY THE DEPARTMENT.

Complying with the authority granted by Congress, the United States Department of Agriculture formulated general principles and regulations for the guidance of experiment station expenditures. This was for the purpose of bringing the disbursement of those institutions within the provisions and intent of the law. It is hoped that hereafter these directions will be accurately carried out in every respect. If the United States experiment stations do not universally conform to the literally correct interpretation of the organic act, it will become necessary to amend the law so as to definitely describe the functions of the institutions and absolutely compel a more rigid accounting for the funds appropriated by the Government of the United States.

Investigations made up to this time verify and affirm the wisdom of the recommendations for the expenditure of these moneys under the supervision and direction of officers of the United States which were made by the Secretary of Agriculture in his report for the fiscal year 1893. The necessity of a governmental and a strict accounting for these funds, is generally recognized by the governing boards and officers of all the experiment stations.

PRELIMINARY INVESTIGATIONS IN ALASKA.

Propositions have been made in Congress and elsewhere looking to the establishment of an agricultural experiment station in Alaska, but information as to the present condition and possibilities of agriculture in that Territory is so limited that a recommendation for the establishment of a station therein is not warranted. Until there shall have been made a preliminary examination of the soil and climatic capabilities of Alaska, it is deemed unwise to establish stations therein. But the estimates for appropriations for the coming fiscal year include one of $5,000 for the purpose of making explorations and investigations as to the agricultural resources of that Territory.

NUTRITION INVESTIGATIONS.

The appropriations for looking into the nutritive value of the various articles and commodities used for human food were continued

and increased by Congress for the past fiscal year. The supervision of the work accomplished under this appropriation remained in charge of the Office of Experiment Stations and the general policy pursued was that outlined in previous reports. As stated in the report of the Secretary of Agriculture for the year 1895, the effort has been made "to build up centers of inquiry where the more scientific and fundamental problems can be best investigated, where workers in this line can be efficiently trained, where the importance and usefulness of accurate information regarding the rational nutrition of man will be impressed upon large bodies of students and from which the practical results of food investigations may be widely and efficiently disseminated."

Experiment stations, agricultural colleges, and other educational institutions, as well as some benevolent associations, have joined with the Department in making these valuable investigations. The funds at the disposal of the Department were more economically and efficiently used in the encouragement of researches on the food and nutrition of man at institutions of learning, in various parts of the country, which would contribute the services of experts, laboratories, and other resources, than they could have been in any other way. In nearly every locality where nutrition investigations have been conducted they have been with the cooperation of some institution of learning. Thus the assistance of those especially interested in this kind of research has been secured; thus the inquiries have been rendered more effective; thus the results, besides being reported to the Department, have been disseminated by publications throughout the country, and thus also they have been generally utilized to the best advantage. Under no other system of operation could so large an amount of good have been accomplished with the appropriations which Congress made for this specific purpose. The data already collated are much more numerous and extensive than could have been obtained in years by the Department alone, unaided by the cooperation of colleges, universities, and their professors.

Reference is made to the report of the Office of Experiment Stations, under whose direction these researches have been pursued, for interesting details of the work.

AGRICULTURAL COLLEGES AND THE CIVIL SERVICE.

In the future may it not be possible for an arrangement to be made, in accordance with law, between the presidents of agricultural colleges and the directors of experiment stations on the one hand and the United States Civil Service Commission on the other hand by which the certificates of the former as to industry, ability, and character will permit their graduates, under the direction of the Secretary of Agriculture, to enter the service without competitive examinations? If a reasonable construction of existing law permits those who have

devoted years of study at experiment stations and in agricultural colleges, and thus made themselves especially skilled and expert in specific lines of investigation, to enter the scientific bureaus and divisions of the United States Department of Agriculture after a rigid examination by their preceptors and certification by them as to their merits, will not the country begin at once to realize direct benefits from experiment stations and agricultural colleges which under the present system seem to be wanting?

In short, by a judicious extension of civil-service rules can not the agricultural colleges be increased as to number of students and at the same time made a scientific rendezvous whence the Department of Agriculture may with certainty always draft into its service the highest possible ability and acquirements in specific lines of scientific research?

ACKNOWLEDGMENTS AND RECOMMENDATIONS.

Reviewing the operations of the Department, it is shown that there has been a material advance in the practical utility of the work carried on by the several chiefs of bureaus and divisions of the Department during the last four years. Some lines of investigation have been suspended, and others, notably those of soils and grasses and nutrition investigation, have been instituted. It is believed that the Section of Foreign Markets will prove of great educational and commercial advantage to the farmers of the country. It is also obvious that the improvements which have been made have not added to the burden of the public expense.

In this last report of the present Secretary of Agriculture he acknowledges with cheerfulness the efficient cooperation of the employees of the Department. He likewise gladly acknowledges his indebtedness to the Chief Executive of the nation, who at all times has given his encouragement and support to every effort made in behalf of a businesslike and economical management of this Department.

Estimates for the ensuing year have been discussed carefully by the Secretary and his able assistant and those chiefs of divisions and bureaus whose positions and intelligent zeal have rendered their advice valuable and desirable. The appropriations estimated for the next year are reasonable and just. Whatever useful results may be obtained by their proper disbursement will redound to the honor of the succeeding Secretary of Agriculture, under whose immediate direction they are to be expended.

The recommendations of former reports as to the importance of speedily providing new and adequate buildings for the proper accommodation of the Department of Agriculture are strenuously renewed.

In this connection it is a duty to protest against the inexcusable practice of including in the appropriations for this Department funds to be expended by the heads of other Departments or of bureaus in

other Departments over which the Secretary of Agriculture has no supervision or control. For the current fiscal year there was included the sum of $82,500 in the appropriations for the Department of Agriculture for certain publications to be distributed by Members of the Senate and House of Representatives. Over that sum of money and the publications provided for no officer of this Department has the slightest supervision. In the same bill there is an appropriation made of $4,500 for the Geological Survey, which rightfully should have been charged to the Department of the Interior. There is neither equity nor good reason for charging to the account of one Department expenditures which are to be made by the officers of another and for which the head of the Department to which the appropriation is charged can be in nowise held responsible.

THE CONDITION OF AMERICAN FARMERS.

The farmers of the United States hold 72 out of each 100 farms—occupied by their owners—absolutely free from mortgages or other incumbrances. The debts secured by liens upon lands used for tillage and the production of crops aggregate, after throwing out the mortgage indebtedness of railroads and other corporations, less than one-sixth of the total indebtedness of the citizens of the United States secured upon real estate.

Out of each thousand farms in the United States only 282 are mortgaged, and three-fourths of the money represented by the mortgages upon the 282 farms was for the purchase of those farms or for money borrowed to improve those farms. And the prevalent idea that the West and the South are more heavily burdened with farm mortgages than the East and Northeast sections of the United States is entirely erroneous.

The States along the North Atlantic shores are quite heavily encumbered with farm mortgages, and New Jersey carries a debt of this kind greater, in proportion to its farm valuations, than any State in the American Union.

The constant complaint by the alleged friends of farmers, and by some farmers themselves, is that the Government does nothing for agriculture. In conventions and congresses it has been proclaimed that the farmers of the country are almost universally in debt, despondent, and suffering. Largely these declarations are without foundation. Their utterance is a belittlement of agriculture and an indignity to every intelligent and practical farmer of the United States. The free and independent farmers of this country are not impoverished; they are not mendicants; they are not wards of the Government to be treated to annuities, like Indians upon reservations. On the other hand, they are the representatives of the oldest, most honorable, and most essential occupation of the human race. Upon it all other vocations depend for subsistence and prosperity. The farmer is the

copartner of the elements. His intelligently directed efforts are in unison with the light and heat of the sun, and the success of his labors represents the commingling of the raindrops and his own sweat.

Legislation can neither plow nor plant. The intelligent, practical, and successful farmer needs no aid from the Government. The ignorant, impractical, and indolent farmer deserves none. It is not the business of Government to legislate in behalf of any class of citizens because they are engaged in any specific calling, no matter how essential the calling may be to the needs and comforts of civilization. Lawmakers can not erase natural laws nor restrict or efface the operation of economic laws. It is a beneficent arrangement of the order of things and the conditions of human life that legislators are not permitted to repeal, amend, or revise the laws of production and distribution.

EFFECTS OF THE HOMESTEAD LAW.

The attention of those who complain of the condition of the American farmer and the hardships which, by stress of the competition of all the farmers of all the world, he is at times compelled to endure, is called to the fact that nearly 2,000,000 of farms of 80 acres each in the United States have been given away by the Government under the homestead act of 1866, during the last thirty years. Those farms contain many millions of acres of arable land.

This giving of something for nothing has resulted in an abnormally rapid increase of the acreage under tillage in the United States during the last thirty years. This also has caused decline in farm land values in the Eastern and older States. Under the timber-culture law the amount donated was equivalent to over 550,000 more farms of the same size. This takes no account of the desert land laws, under which numberless choice locations were given away, or of the large body of land patented to States and corporations and sold at merely nominal prices to build up the country. Lands long tilled and rendered partially infertile could not, of course, enhance in value and sell in competition with virgin soil which was being donated by the General Government. Lines of rail transportation have either pioneered the homestead lands or quickly followed their settlement. Reduction in the cost of carriage has made the long haul of the products from those far away—given away—farms but a trifle more than the freight upon products grown in the Middle and Eastern States going to the same domestic markets or to those of Europe.

No legislation relative to the public domain has been so directly inimical to the farmers who had bought and paid for the lands upon which they lived and labored. Until the homestead law came into vigor, in 1866, the farmers of the United States competed with each other upon land representing accumulated capital and fixed investments, but after the homestead-law lands began to produce and ship into market crops from the vast area of fertility which they represent,

Eastern and Middle States' land values declined. It was impossible for them to enhance in competition with fresher and more productive land *obtained as gratuities by other farmers.* It was equally impossible—demand remaining stationary and supply suddenly increasing—for farmers in the older States to profitably sell their products in competition with those of the newer States grown upon lands which cost their owners nothing.

RATES OF INTEREST UPON FARM MORTGAGES IN THE UNITED STATES.

Many misinformed persons have declared in their lamentations as to the alleged wrongs of farmers that even money lenders charge greater rates of interest for money loaned upon lands occupied as farms than for that loaned upon other kinds of real estate. So much has been said relative to this subject that it becomes a duty to present in indubitable shape the facts and figures regarding interest upon farm land loans.

The rate of interest charged on mortgages upon homes—that is, residential property other than farms—averages throughout the United States eighty-four one-hundredths of 1 per cent less than the rate of interest charged upon farm loans. In seventeen States the average rate charged on the latter loans is less than that demanded for loans upon other homes and residential property. In two States the rates are the same upon urban and rural real estate. In Pennsylvania, Maryland, Virginia, West Virginia, Kentucky, Michigan, Wisconsin, Iowa, and Kansas, and in Texas and Alabama, the rates of interest are less upon money secured by farm mortgages than they are in those States upon money secured by other realty.

In five States, including Kansas, the difference in favor of the farmer is from one-fourth to one-half of 1 per cent per annum, and in Texas it is over 1 per cent.

The agriculturist is not discriminated against as compared with any other class of citizens when he comes to borrow money. But if the Western farmer does pay a somewhat higher rate of interest than he would have to pay in the East, so does the Western merchant, lumberman, banker, common carrier, or manufacturer also have to pay a higher rate than persons engaged in the same business nearer the money centers.

During the last ten years in the Western States there has been a steady maintenance of land values in nearly all sections, and in some an enhancement of the prices of land. Between 1880 and 1890 the increase of farming-land values, as reported by the occupants of the farms themselves, was more than enough to offset the entire interest charge for the decade in most of the great agricultural States of the West and South. In Kansas and Nebraska the increase of land values in that period of time exceeded the entire farm incumbrance, principal and interest. In the States of Washington and California it was

nearly twice as great as the combined principal and interest. In fact, where the interest was highest the increase in value was greatest.

Average interest rate per annum on farm mortgages in force in 1890.

	Per cent.
North Atlantic States	5.62
South Atlantic States	6.64
North Central States	7.43
South Central States	8.05
Western States*	9.08
The United States	7.07

Taking the country as a whole, the most numerous class of farm mortgages and that representing the largest total incumbrance was the class that paid 6 per cent.

North Atlantic Group.

	Per cent.
Proportion of farm mortgages paying 5 per cent interest, or under	30.60
Proportion paying not more than 6 per cent	98.16

North Central Group.

Proportion paying not more than 6 per cent interest	21.34
Proportion paying not more than 7 per cent interest	51.60
Proportion paying not more than 8 per cent interest	83.54

Western Group.

Proportion paying not more than 8 per cent interest	37.74
Proportion paying not more than 10 per cent interest	88.14

Typical States and average rates of interest on farm mortgages.

	Per cent.		Per cent.
Pennsylvania	5.43	Minnesota	8.18
Massachusetts	5.58	Nebraska	8.22
New York	5.66	Colorado	9.23
Ohio	6.68	South Dakota	9.52
Indiana	6.89	North Dakota	9.54
Illinois	6.92	Wyoming	10.92
Wisconsin	6.64	Idaho	10.55
Michigan	7.10	Utah	10.13
Iowa	7.36	Washington	9.87
Missouri	7.93	Oregon	9.06
Kansas	8.15	California	8.78

RECENT ANNUAL SALES OF FARM PRODUCTS ABROAD.

Attention is called to the fact that during the fiscal year just ended the exported products of American farms aggregated a value of $570,000,000. That is a gain of $17,000,000 over the preceding year. During the fiscal year 1896 agricultural products make up only 66 per

* Rocky Mountain region and Pacific Slope.

cent of the total exports of the United States, as against 70 per cent in 1895, 72 per cent in 1894, and 74 per cent in 1893. But the reason of a relatively decreased value of 4 per cent, with an increase in the absolute valuation of agricultural products shipped in the year 1896, amounting to $17,000,000 more than those of the preceding year, 1895, is solely due to the unprecedented sale abroad of American manufactured goods and commodities, the exports of which from the United States jumped from a valuation of one hundred and eighty-four millions of dollars ($184,000,000) in 1895 to two hundred and twenty-eight millions of dollars ($228,000,000) in 1896.

GENERAL PROSPERITY DEPENDENT UPON AGRICULTURAL PROSPERITY.

It is admitted by all economists that general prosperity depends absolutely upon agricultural prosperity. The largest market for the products of agriculture and for the products of the manufactories is *admittedly the home market. It is, however, true that the export* trade is the regulator, the balance wheel, for domestic trade. Therefore, it follows that the interest of the manufacturer, as well as of the farmer, is found in the most rapid possible increase of the export of farm products. By such exportations farmers and those engaged in subsidiary arts, who constitute nearly one-half of the population of the United States, and who mainly create the demands of the home market for manufactured goods, will have an increasing power to buy those goods. On the other hand, the imported products of agriculture are limited in number. They are mainly sugar, wool, hemp, coffee, tropical fruits, and nuts.

Any commercial system which will increase with celerity and extend with certainty the export of farm products from this country will be of the utmost advantage to agriculture and all those interested in its profitable expansion. And that political economy which best advances the interests of the agriculturists furnishes the best impetus to the manufacturers of the United States, because when the prosperity of the American farmer is established by virtue of constantly increasing sales of his products in foreign markets normal and legitimate protection will have been secured to the American manufacturer, for his best customers are farmers and those engaged in occupations which depend directly for profit upon the prosperity of farmers.

THE BEST MARKETS FOR AMERICAN PRODUCTS.

The best foreign markets for American products and commodities are among those nations whose power to buy things and pay for them has been augmented by the use of labor-saving inventions. The principal market, therefore, for American exports is found in the United Kingdom of Great Britain and her colonies, which took during the last fiscal year $511,751,040 worth of exports from the United

States. That is to say, English-speaking people bought 58 per cent of all commodities and products exported from the United States during the fiscal year 1896. Germany, France, Holland, and Belgium purchased during the same period of time $210,953,054 worth of exports from the United States. That is, the United Kingdom of Great Britain and the nations enumerated purchased 81.9 per cent of the entire export output of the United States during the fiscal year 1896.

Other nations, including the remainder of Europe, Asia, Africa, and South America, took the balance of American exports, which amounted to $160,902,844 in value and to 18.1 per cent of the entire shipments of this country.

QUESTIONS FOR THE AMERICAN FARMER.

The question for American farmers and all other citizens engaged in gainful occupations to consider is, How can the United States supply the markets of the world with staple food products and necessary articles of manufacture? If the labor cost of a product is governed by the rate of daily wages, how can a dollar's worth of farm products, or of commodities from manufactories in the United States, be sold in foreign parts?

Is not that nation which, like the United States, possesses the greatest power and facilities for producing and manufacturing those exchangeable things which the world demands destined to monopolize the markets of the globe? Do not the most favorable natural conditions for varied and successful agriculture abound in the United States? In what country is there less burden of national taxation? What other people pay so little for the maintenance of a standing army? Who can compete with the American farmer or the American manufacturer in developing the best results of human toil with a minimum of human effort?

EFFECT OF LABOR-SAVING INVENTIONS—WAGES.

In the United States labor-saving inventions are applied in almost every avenue of production. Nowhere else on the globe has agriculture so many improved, useful, and ingenious devices, implements, and machines at its command. Therefore the exports of American farm products must increase; and the sales from those exports, after yielding adequate profits to maintain the farm, will yield also a higher rate of wages to those who do the mechanical and manual work than the wages paid in those nations which are our principal customers. Necessarily the wages paid in the United States—for instance, in the production of wheat and cotton, the great articles of export—are from 50 to 500 per cent higher than they are in those countries with which we compete in selling our cotton and wheat; while in manufactures from the metals the wages paid those who make articles of iron and

steel for export are from 25 to 100 per cent higher than the wages paid workers in the same industries by the nations with which we compete.

MILLIONS DEPEND UPON FOREIGN MARKETS.

Under the foregoing conditions, about 1,700,000 laborers on American farms are almost constantly employed in developing agricultural products for exportation.

At the same time, with a rapidly increasing export of manufactured articles from the United States, the number of laborers engaged in mechanical occupations, who must depend for their steady employment upon the demand which the world makes for American goods, is constantly increasing. It is probably quite safe to declare that at least two millions of American workmen, on farms and in factories, subsist almost wholly upon employment based upon foreign demand for American commodities. And in this contest for feeding and furnishing mankind—notwithstanding the fierce competition which meets us all over the globe—American Agriculture, Manufacture, and Commerce are steadily gaining more trade, and thus furnishing an enlarged wages fund, on a Gold basis, out of which many thousands of American laborers and skilled artisans draw their yearly remuneration, and upon which they and their families largely depend for employment and comfort.

J. STERLING MORTON,
Secretary.

NOVEMBER 16, 1896.

REPORT OF THE CHIEF OF THE BUREAU OF ANIMAL INDUSTRY.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., October 3, 1896.

SIR: I have the honor to transmit herewith a report of the operations of the Bureau of Animal Industry for the fiscal year ended June 30, 1896.

Respectfully,
D. E. SALMON,
Chief.

Hon. J. STERLING MORTON,
Secretary.

WORK OF THE INSPECTION DIVISION.

MEAT INSPECTION.

The inspection of all the animals slaughtered in the United States for human food, the meat of which is to be shipped in the channels of interstate or foreign commerce, is a task of such magnitude and necessitates a service of such proportions that it requires years to build up and train a sufficient force and extend its operations over our entire territory, as contemplated by the law. The work of this division has, therefore, been progressive, and the meat inspection at the abattoirs, which in 1892 included but 3,800,000 head of animals and in 1893 but 4,885,000, has in 1896 been applied to the enormous number of 23,275,000. In addition to this abattoir inspection, there has been an inspection in the stock yards of animals going to abattoirs in other cities, or which have been purchased by various buyers not having other inspection, to the number of 12,641,000. The inspection force of the Bureau has, consequently, made an ante-mortem inspection during the year of a total of 35,917,000 meat-producing animals. This has been an increase of more than 50 per cent over the preceding year. The number of abattoirs and cities at which inspection is conducted has nearly doubled within the year.

There must be a still further increase of the inspection service, for, although by far the greater part of the meat shipped from State to State or to foreign countries is inspected, there is still a considerable quantity which is not reached. The consumer of our meats in other countries may be easily protected from that which is uninspected by a regulation of his government requiring all imported meats to bear inspection marks, but our own citizens do not yet receive such an absolute protection, as the inspection is not sufficiently extended to warrant a prohibition of the interstate shipment of all meat that has not been inspected. American consumers may, however, demand of the retailers of meats that only the inspected article be sold to them, and they can satisfy themselves that this is done by examining the tags and stamps which are put upon it for identification.

The meat-inspection force is now a very efficient one. A large proportion of its members are able and experienced men, and the additions made by appointment from the eligible list upon certification by the Civil Service Commission have been notably superior to the men obtained before this force was brought within the classified service. The discipline has, also, greatly improved since the merit system was adopted.

With this efficient force at our command, it has been possible to greatly extend the system of ante-mortem inspections in the stock yards and to embrace all of the important centers of the live stock trade. The animals entering these yards are inspected, and those found to be diseased or in a condition unfitting them for the production of wholesome meat are marked with a condemnation tag, showing that they have failed to pass the inspection. Such animals are held for future disposition, and as a large proportion of them have been rejected on account of pregnancy they and their young are allowed to be shipped to the country in order that they may be fed until in a suitable condition for slaughter. Of the condemned animals which are not returned to the country, some die in the pens, others are released after they have been held until their condition has improved, but the greater part is slaughtered, and if the post-mortem examination confirms the diagnosis that the animals are in a diseased or unwholesome condition, the carcasses are disposed of in such a manner that they can not be utilized for human food.

Following is a statement of the ante-mortem work at the abattoirs and stock yards. The figures in the first column approximate the actual number of animals inspected for abattoirs having Government inspection, and includes those inspected in the yards for such local abattoirs and those inspected at the abattoirs in cities where there is no yard inspection. The second column gives the additional number of inspections in the yards on animals not purchased for the official abattoirs in those cities, and does not represent the actual number inspected, for the reason that, as the inspection is made at the scales and the animals may change hands several times, being weighed on each occasion, the same animal may pass the inspector more than once. The number of animals rejected as unfit for food at the time of the ante-mortem inspection is given under the heading "Animals condemned."

While the exact number of individual live animals inspected can not be told, the number finally condemned as unfit for food may be ascertained by adding the number condemned at the abattoirs, both ante-mortem and post-mortem, and the number condemned post-mortem in the stock yards inspection.

Ante-mortem inspection.

Animals.	Number of inspections.			Animals condemned.		
	For official abattoirs in cities where the inspection was made.	For abattoirs in other cities and miscellaneous buyers.	Total.	At abattoirs.	In stock yards.	Total.
Cattle	4,050,011	3,479,512	7,529,523	233	22,123	22,356
Sheep	4,710,190	1,608,094	6,318,284	692	12,533	13,225
Calves	213,575	101,271	314,846	47	2,790	2,837
Hogs	14,301,963	7,452,863	21,754,826	11,889	39,092	50,981
Total	23,275,739	12,641,740	35,917,479	12,861	76,538	89,399

Last year the number of animals inspected for abattoirs having official inspection was 18,783,000, and the total number of ante-mortem inspections made was 23,885,721. There has been an increase, therefore, in the number of animals inspected for abattoirs where inspection was maintained of 4,492,739, or nearly 24 per cent, which is due principally to the extension of the inspection of sheep where it had not been possible to do so before. The increase in the total number of inspections is 12,031,758, or over 50 per cent.

Following is a table showing the number of animals inspected at time of slaughter and number of carcasses and parts condemned:

Post-mortem inspection.

Animals.	Number of inspections.			Carcasses condemned.			Parts of carcasses condemned at abattoirs.
	At abattoirs.	On animals condemned in stock yards.	Total.	At abattoirs.	Stock yards inspection.	Total.	
Cattle	3,985,484	9,977	3,995,461	4,886	3,871	8,757	6,798
Sheep	4,629,796	3,546	4,633,342	2,794	1,541	4,335	242
Calves	256,905	931	257,836	276	761	1,037	33
Hogs	14,250,191	28,028	14,278,219	31,178	15,011	46,189	33,930
Total	23,122,376	42,482	23,164,858	39,134	21,184	60,318	41,003

Last year the number of post-mortem inspections reported was 18,883,275.

There were 13,289,680 quarters and pieces of beef, 328,589 carcasses of hogs, 151,959 sacks of pork, 3,516,896 carcasses of sheep, and 183,685 carcasses of calves tagged or otherwise marked as inspected meat. Of these there were exported 1,030,334 quarters and 16,818 smaller pieces of beef (equivalent to nearly 260,000 cattle), 349 carcasses of sheep, and 3,281 carcasses of hogs.

The meat-inspection stamp was affixed to 3,697,701 packages of beef and 6,034,165 packages of hog products; 63,313 of the latter contained microscopically examined pork. There were issued 15,211 certificates of inspection for meat products, of which 3,481 were for microscopically examined pork.

There were sealed 11,855 cars containing inspected meat in bulk for shipment to establishments having Government inspection and to other places.

The cost of this work was $341,456.24, or 0.95 cent for each ante-mortem inspection, and covers the expense of all the subsequent work of post-mortem inspection, tagging, stamping, and issuance of certificates of inspection. In 1895 it was 1.1 cents, in 1894 it was 1¾ cents, and in 1893 it was 4¾ cents.

Table showing number of abattoirs and cities where inspection was maintained during the fiscal years given.

Fiscal year.	Number of abattoirs.	Number of cities.
1892	28	12
1893	37	16
1894	46	17
1895	55	19
1896	102	26

MICROSCOPIC INSPECTION OF PORK.

The following table shows the exports of microscopically inspected pork, 1892–1896:

Fiscal year.	To countries requiring inspection.	To countries not requiring inspection.	Total.
	Pounds.	*Pounds.*	*Pounds.*
1892	22,025,698	16,127,176	38,152,874
1893	8,059,758	12,617,652	20,677,410
1894	18,845,119	16,592,818	35,437,937
1895	39,355,230	5,739,368	45,094,598
1896	21,497,321	1,403,559	22,900,880

The great decrease in the exports this year as compared with last year is probably due to less favorable conditions. The exports for 1895 were unusually heavy, but if we compare with other years it will be seen that the shipments to countries requiring the inspection were greater than in 1893 and 1894, and not materially different from 1892. The shipment of microscopically inspected pork to countries not requiring this inspection has been intentionally discouraged, as the expense in such case is not warranted.

There were 469,025 carcasses and 510,355 pieces examined, making a total of 979,380 specimens inspected by the microscopical force; 11,100 samples contained trichinæ. The cost of this inspection was $60,485.93, an average cost per specimen of 6.18 cents. Last year the number of specimens examined was 1,910,415 (almost double the number this year), and consequently the average cost was less, being 4.9 cents; in 1894 it was 6⅗ cents, and in 1893 it was 8¾ cents.

The cost of the microscopical inspection per pound of inspected meat exported was 0.264 cent; in 1895 it was 0.2 cent, and in 1894, 0.248 cent.

[NOTE.—The cost per pound, as given above, was obtained, as heretofore, by dividing the cost of the work during the year by the number of pounds exported. This method is objectionable, because the true average cost per pound can not be found by it, for the reason that the meat examined during one month may not be exported for several months. To illustrate this point: During the first six months the cost was $19,848.92; pounds exported, 10,492,180; last six months, cost, $40,637.01; pounds exported, 12,408,700, making an average of 0.19 cent for the first period, and 0.33 cent for the last. From this it would seem that the meat examined during the latter part of the fiscal year was intended for shipment during the next year.]

INSPECTION OF VESSELS AND EXPORT ANIMALS.

There were 819 clearances of vessels carrying cattle and sheep. All of these vessels were carefully inspected as to fittings, space, and other accommodations for live stock before a clearance would be authorized. The number of certificates of inspection of export animals issued was 1,393.

Following is a statement showing the inspection of domestic cattle and sheep for export and the number exported for 1896 and previous years:

Fiscal year.	Cattle.				Sheep.		
	Number of inspections.	Number rejected.	Number tagged.	Number exported.	Number of inspections.	Number rejected.	Number exported.
1896	815,882	1,303	377,639	365,345	733,657	893	422,603
1895	657,756	1,060	324,339	324,299	704,044	179	350,808
1894	725,243	184	360,580	363,535	135,780		85,809
1893	611,542	292	280,570	289,240			

During the year the number of Canadian cattle exported from American ports was 1,482; number of Canadian sheep, 10,512. Last year there were 1,834 cattle and 38,873 sheep from Canada.

The percentage of loss in the shipments of cattle and sheep to London, Liverpool, and Glasgow, where inspectors of this Department are stationed, is about half that of last year. The number of cattle inspected after landing was 348,833; the number lost in transit was 1,107, or 0.32 per cent, against 0.62 per cent last year and 0.37 per cent in 1894. The number of sheep inspected was 389,534, and 4,587 were lost on the voyage, a percentage of 1.16, compared to 2.7 in 1895 and 1.29 in 1894.

The cost of the export inspection and the Texas fever work, which includes the inspection of live stock imported from Mexico, was $107,273.07. Taking half of this sum as the amount chargeable against the inspection of animals for export, the cost of inspecting the 787,948 cattle and sheep exported would be $53,636.54, or 6.8 cents per head. Last year the average was 7.74 cents, and in 1894 it was 10.75 cents per head. The number of individual inspections made on these animals was 1,549,539 in this country and 738,367 in Great Britain, a total of 2,287,906. This gives an average cost of 2.34 cents for each inspection, against 2.66 last year.

SOUTHERN CATTLE INSPECTION.

During the quarantine season, from February 15 to December 1, 1895, 47,082 cars, containing 1,224,715 cattle, from the infected district were received and inspected at the quarantine pens in the various stock yards, and 45,390 cars were cleaned and disinfected under supervision of the inspectors.

Orders issued by the Secretary of Agriculture modifying the regulations governing the importation of live stock admitted cattle from Mexico, after inspection, for immediate slaughter or for grazing below the quarantine line, subject to the regulations applying to the native cattle of the infected district. Under these orders there were 219,814 Mexican cattle imported and inspected during the year.

INSPECTION AND QUARANTINE OF IMPORTED ANIMALS.

The number of animals imported and quarantined during the year was as follows:

Quarantine station.	Cattle.	Sheep.	Swine.
St. Denis, Md		45	
Garfield, N. J	54	265	22
Littleton, Mass		7	8
Vanceboro, Me	1		
Newport, Vt	10		
Buffalo, N. Y	380		
Port Huron, Mich	10		
Total	455	317	30

There were also at the Garfield Station 12 camels, 1 goat, and 1 deer, making a total of 816 imported animals held in quarantine for the prescribed period.

The number of animals imported from Canada and inspected, not subject to quarantine, was 317,038 sheep, 216 swine, 151 cattle, and 2:

deer. There were also inspected 2,168 sheep, 42 hogs, and 3 goats imported from Mexico.

For the purpose of comparison the following tables are given:

Table showing the number of animals inspected for abattoirs having inspection.

Fiscal year.	Cattle.	Calves.	Sheep.	Hogs.	Total.
1891	83,891				83,891
1892	3,167,009	59,089	583,361		3,809,459
1893	3,922,174	92,947	870,512		4,885.633
1894	3,862,111	96,331	1,020,764	7,964,850	12,944,056
1895	3,752,111	109,941	1,344,031	13,576,917	18,783,000
1896	4,050,011	213,575	4,710,190	14,301,963	23,275,739

Table showing total number of employees engaged in meat inspection (only) on the 30th of June of each year and the number of these who were appointed upon certification by the Civil Service Commission.

Year.	Inspectors and assistant inspectors.		Stock examiners and taggers.		Clerks.		Microscopists.	Assistant microscopists.	Laborers.	Total.
	Total.	Civil service appointments.	Total.	Civil service appointments.	Total.	Civil service appointments.				
1892	33		151		11		7	143	30	375
1893	32		163		6		9	177	31	418
1894	40		199		6		7	171	16	439
1895	51	14	232		12		5	195	32	527
1896	77	46	287	76	17	4	4	183	11	579

The effect of placing the force of this Bureau within the classified service has been very marked in increasing its efficiency and improving its discipline. This is particularly apparent with the employees stationed at other cities than Washington. The decreased expense of the inspection work is largely due to this improvement in the force. Every person feels now that his standing, retention in the service, and chance of promotion depends upon the interest which he shows and the care and fidelity with which his duties are performed.

WORK OF THE PATHOLOGICAL DIVISION.

The most important work of this division during the year has been an experimental study of Texas fever, with a view to discover a method of making animals which are shipped to the infected district immune from the effects of the disease. A number of animals have been treated by placing ticks upon them at a season of the year when the disease develops in a mild form, and others have been inoculated with blood from affected animals. The cattle so treated were shipped to the infected district early in the summer, together with other animals that were not made immune, and they have shown a very marked power of resisting the contagion. It is hoped that by treating animals according to this plan it will be possible to take them to the infected district for the improvement of the herds, and that the serious losses which have occurred in the past under such circumstances will be avoided.

Experiments have been continued during the year in the hope of securing a mixture that could be used as a dip for the destruction of the ticks which disseminate the contagion of this disease. No mixture

has been found which gave complete satisfaction, but there is reason to believe that by continuing the investigations a plan will be developed by which the cattle can be freed from these parasites before they are shipped from the infected district. A successful method for accomplishing this would be of such great importance to cattle raisers in the infected district that the experiments should be continued until definite results are reached.

Investigations have also been made of the disease known as rabies, particularly as it is discovered in the District of Columbia and vicinity. These investigations show the disease to be more prevalent than is usually supposed, and indicate the necessity of giving information which will enable those interested to identify the disease when it exists and adopt proper preventive measures.

An investigation has also been made of the peculiar disease of Florida and adjacent sections, popularly known as "leeches," and interesting results have been obtained. Full information concerning the investigations of this division will be found in the Twelfth and Thirteenth Annual Reports of this Bureau and in the bulletins issued from time to time.

WORK OF THE DAIRY DIVISION.

The Dairy Division was established July 1, 1895. Its work has consisted during the year in making a survey of the dairy industry of the United States and collecting such information as was needed for forming an intelligent idea of the magnitude, condition, and needs of the dairy industry. A number of bulletins have been issued, for which there has been a great demand, and much satisfaction has been expressed by those interested in dairy matters that the Department of Agriculture has established this division.

There is undoubtedly a great opportunity to assist those engaged in dairying by the collection and dissemination of information relating to this important industry. During recent years there has been a great development in dairy matters, many valuable discoveries have been made, and methods radically changed. This development is still in progress, and it is essential to the prosperity of the dairy industry in this country that those engaged in it should have early and reliable information of the devices for reducing the cost of production which have been successfully adopted here or elsewhere. It is the purpose of the dairy division to collect such valuable information, to bring it properly to the attention of our dairymen, and to bring those engaged in dairying in closer and more helpful relations with each other.

PUBLICATIONS.

There have been published during the fiscal year the following reports, bulletins, pamphlets, circulars, and map:

Tenth and Eleventh Annual Reports of Bureau of Animal Industry, 1893-94.
Report of the Chief of the Bureau of Animal Industry for 1895. (Reprint.)
The Federal Meat Inspection. (Reprint from Yearbook.)
The Pasteurization and Sterilization of Milk. (Reprint from Yearbook.)
Some Practical Suggestions for the Suppression and Prevention of Bovine Tuberculosis. (Reprint from Yearbook.)
The Dairy Herd, its Formation and Management. (Reprint from Yearbook.)
Bulletin No. 8. Investigations Concerning Infectious Diseases Among Poultry.
Bulletin No. 9. Rules and Regulations Governing the Operations of the Bureau of Animal Industry.
Bulletin No. 10. Corn-Stalk Disease and Rabies in Cattle.

Bulletin No. 11. Statistics of the Dairy.
Circular No. 3. A Nodular Tæniasis in Fowls.
Circular No. 4. Crossing Improved Breeds of Swine with the Common Hogs of Florida.
Circular No. 5. The Direct Transmission of Infectious Entero-Hepatitis in Turkeys.
Circular No. 6. Black Quarter. (Reprint.)
Circular No. 7. Actinomycosis, or Lumpy Jaw. (Reprint.)
Circular No. 8. Injuries to Cattle from Swallowing Pointed Objects. (Reprint.)
Circular No. 9. Check List of the Animal Parasites of Chickens.
Circular No. 10. List of the State Dairy Commissioners and Associations of Dairymen in the United States and Canada for 1896.
Circular No. 11. How to Select Good Cheese.
Circular No. 12. Check List of the Animal Parasites of Turkeys.
Circular No. 13. Check List of the Animal Parasites of Ducks.
Circular No. 14. Check List of the Animal Parasites of Geese.
Butter Substitutes. (Reprint from Yearbook.)
Inefficiency of Milk Separators in Removing Bacteria. (Reprint from Yearbook.)
The Manufacture and Consumption of Cheese. (Reprint from Yearbook.)
Map Showing the Boundary Line of the District Infected with Splenetic, or Southern, Fever of Cattle.

REPORT OF THE CHIEF OF THE DIVISION OF CHEMISTRY.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF CHEMISTRY,
Washington, D. C., September 10, 1896.

SIR: In accordance with the instructions received from the honorable Secretary of Agriculture, I submit herewith for your consideration the report of the work of the Division of Chemistry for the fiscal year ended June 30, 1896, together with some suggestions in regard to promoting the efficiency of the work of the division and an estimate of the appropriations required for the fiscal year ending June 30, 1898.

Respectfully,

H. W. WILEY,
Chief.

Hon. J. STERLING MORTON,
Secretary.

WORK OF THE YEAR.

ANALYTICAL WORK.

The total number of samples submitted for analysis, on hand July 1, 1895, was 495. These samples consisted of 253 cereals, 51 other human food products, 3 cattle foods, 78 products of pot experiments with soils, 18 fertilizers, 54 soils, 9 ashes, and 27 miscellaneous samples.

Many of these samples were partly analyzed before the commencement of the fiscal year begun July 1, 1895. The greater part of them, however, was still awaiting analytical work. During the past fiscal year there were received at the laboratory 1,230 samples, classified as follows:

Cereals, 35; other human food products, 557; food adulterants, 23; cattle foods, 24; products of pot experiments with soils, 224; waters, 19; fertilizers, 34; soils, 125; samples for the Association of Official Agricultural Chemists, 31; ashes, 25; miscellaneous, 133.

During the year 657 analyses were completed and reported, classified as follows:

Cereals, 14; other human food products, 355; food adulterants, 23; cattle foods, 25; waters, 18; fertilizers, 49; soils, 12; samples for the Association of Official Agricultural Chemists, 31; ashes, 11; miscellaneous, 119.

The number of samples on which work had not been commenced or was not finished at the close of the year was as follows:

Cereals, 274; other human food products, 253; cattle foods, 2; products of pot experiments with soils, 302; water, 1; fertilizers, 3; soils, 167; ashes, 23; miscellaneous, 43; total, 1,068.

In explanation of the above statement, it may be said that the analytical work on many of the samples was nearly completed at the end of the fiscal year and has since been finished. This is especially true of the cereals, other human food products, and products of pot experiments and soils. Shortly after the commencement of the present fiscal year the analysis of the cereals was completed and the results reported to the Division of Vegetable Physiology and Pathology, from which the samples had been received. More than half of the samples of other human food products, products of pot experiments, and soils were finished and reported shortly after the commencement of the present fiscal year. Nevertheless, the fact remains, as is shown by the above figures, after the proper corrections, as indicated, that the force of the division is not large enough to keep up with the work which it has undertaken.

CHANGES IN PERSONNEL.

During the year two of the assistants in the division left the public service to accept employment at more remunerative wages in manufacturing establishments. Only one appointment was made during the year to fill the vacancies thus occasioned.

CHARACTER OF THE WORK.

But little change was made during the year in the character of the work of the division. The chief lines of investigation are still in the direction, on the one hand, of the composition and adulteration of human foods and, on the other, of the composition and characteristics of the typical soils of the United States with especial reference to their biological relations, the micro-organisms which they contain, and to the plants growing therein. The nature of the work undertaken in this direction is unique, consisting of triple investigations having for their object the determination of the chemical and physical characteristics of the soil, the nature and activity of the nitrifying organisms contained therein, and the determination of the relations of the soil to the growing plant as indicated by cultural experiments in pots, which are subjected to identical conditions of control.

MISCELLANEOUS INVESTIGATIONS.

In addition to these principal lines of investigation, the usual miscellaneous work of the division has been carried on. The analysis of mineral waters, patent medicines, and ores of the precious metals has been uniformly declined. It is well, however, to again emphasize the fact, which still seems to be unappreciated, that it is impracticable for this division to undertake complete analyses of mineral waters, proprietary medicines, and minerals containing precious metals. It would be well for the people of the country to understand that there is no department of the Government where such analyses can be secured.

The firm stand which has been recently taken by the Department in refusing to authorize analyses even of agricultural and food products and fertilizers, and to give certificates therefor which can be used for advertising, has already borne good fruit. The demands for such analyses, while they have not ceased, have nevertheless diminished very much in frequency and insistency.

COOPERATION WITH ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS.

The division continues as heretofore to cooperate with the Association of Official Agricultural Chemists in its highly useful and practical work. This association, composed of men connected with the State boards of agriculture, agricultural colleges, and experiment stations, has for its principal object the formulation of methods of analysis embodying the latest and best processes for the accurate analytical determination of the components of soils, fertilizers, and agricultural products. The methods agreed upon by the association become for the following year the official methods for the whole country. While it is not claimed that these methods are absolutely exact, yet they represent the best theory and practice of the times. The association, while conservative, is ever willing to adapt its methods to recent discoveries and improvements as soon as their merits have been established.

One of the most interesting problems which now confronts the association, and in which the Division of Chemistry is already interested, relates to the possibility of determining the availability of plant foods by strictly chemical methods. It is believed by this division that the only rational method of securing these results is to combine the chemical methods in the laboratory with the actual results obtained by plants under standard conditions of culture. It is this idea which is now elaborating in the pot-culture experiments begun four years ago and still vigorously prosecuted by this division.

The relations of the growing plant to different forms of phosphoric acid presented to it in commercial fertilizers is one of special prominence. It now seems to be well established by experiments with plants that the availability of phosphatic foods can not be arbitrarily measured by their solubility in water and a neutral solution of ammonium citrate of a given specific gravity. The chemical world is gradually reaching the conclusion that each type of phosphatic fertilizing material deports itself in a specific manner with a given plant and soil, and that different types of plants differ in their relations to a given phosphatic food. It follows from this that any method of chemical analysis, which would definitely establish the availability of a given phosphatic fertilizer for a given plant, in a given soil, might lead to wholly erroneous data, if any one or two of the factors above mentioned be varied. The experiments which have been conducted by this division lead to the conclusion that the soil itself is one of the most important of these variables. A large part of the work, therefore, in connection with the Association of Official Agricultural Chemists, has been for some time and is still directed to a study of the availability of plant food as determined by the variations in the form of the food itself, of the plant to which it is fed, and the soil with which it is mixed.

PROGRESS OF THE WORK.

For the fiscal year ended June 30, 1896, I am able to report the following progress in the work of the division:

In the work on the composition of foods and investigation of food adulterations, an extensive study of the presence of zinc in evaporated fruits has been completed and the results published in Bulletin 48. The investigation of this subject was undertaken by reason of complaints,

made through our consular agents in Europe, to the State Department, of the prohibition and restriction of the sale of American evaporated fruits in the continental markets. The ground for the prohibition complained of was the alleged presence of zinc, in quantities deleterious to health, in American evaporated fruits due to the drying of these fruits on trays made of galvanized iron. A representative of the division visited the principal centers for the manufacture of evaporated apples and collected an extensive series of samples. Other samples were obtained from exporters and still others from the consular agents in Europe, representing evaporated fruits which had been condemned and prohibited of sale by the health authorities. The results of the examination showed the constant presence of a small amount of zinc in all fruits dried on galvanized-iron trays. The quantities of zinc found, however, in all cases, were extremely minute, being in no instance sufficient to imperil health. In order, however, to avoid any cause whatever of complaint, the manufacturers of evaporated fruits were advised to substitute other materials for the galvanized iron in the trays of their furnaces. Iron wire coated with tin was recommended, for theoretical reasons. A series of experiments was conducted in this division with trays made of aluminum wire, which conclusively proved that this material could be used as an acceptable substitute for galvanized iron and by its use every possible objection hitherto urged against the sale of American evaporated fruits in European markets would be withdrawn. The great abundance and cheapness of aluminum at the present time render the change from the galvanized iron wire trays to those made of aluminum wire easy of accomplishment at a moderate expense.

The analytical work in the study of the composition of foods and of their adulterants has been pushed as vigorously as the diminished appropriation for this purpose would permit. The work during the year was confined almost exclusively to an examination of foods made from cereal products. An attempt has been made to secure samples of every leading prepared cereal food which is offered for sale in the United States. Restricted, however, as we are by the paucity of funds to the local markets, it would not be surprising to find that many of these foods manufactured and sold in other localities have been omitted from our list. In addition to the local markets, we have made a careful study of the advertisements of prepared foods in the periodical press of different parts of the country, and in this way have been enabled to secure many samples which are not offered for sale in our local markets. It is believed that a fairly representative collection has been made of breakfast foods, breads, cakes, biscuits, and other cereal preparations. By reason of the magnitude of the analytical work and the impracticability of placing the whole of the force on this line of investigation, the progress of the work has been annoyingly slow, but at the end of the year it was practically completed and the results will be published during the present fiscal year as Part 9 of Bulletin No. 13.

The work in the investigation of typical soils was prosecuted during the year with all possible vigor. For the reasons just mentioned the progress in this work has also been much slower than could be desired. Only three of the members of the force could be spared for the analytical work, while a fourth has been occupied almost exclusively with the bacteriological examinations. Two crops were harvested from the culture pots during the year, one of beans and oats in July and another of buckwheat in September. By varying the

crops in this way it is possible to secure two harvests during a season. In the early spring of the present year the pots were again planted to pease and beans, but the harvest of this crop was not accomplished until the beginning of the present fiscal year. In work of this kind it is unsafe to draw any conclusions until a large amount of analytical data, extending over several seasons, has been accumulated. The results obtained, however, are of such a nature as to strengthen the belief that the method now trying is the most rational one which has heretofore been devised for a complete study of soils in relation to their possibilities of producing crops.

The work of the division in collaboration with the Association of Official Agricultural Chemists has been successfully prosecuted on every point submitted for investigation by that body. It is believed that a special function of the Division of Chemistry is found in determining the value of proposed innovations in method of analysis of soils, fertilizers, and agricultural products, and no better opportunity for the prosecution of this kind of work could possibly be presented than is found in connection with the work of the Association of Official Agricultural Chemists.

In addition to this work, some of the assistants in the division have also undertaken the task of abstracting methods of analysis relating to agricultural interests for publication in the Experimental Record of the Office of Experiment Stations.

In the miscellaneous work of the division commendable progress may be reported, although it is the policy of the division to subordinate the miscellaneous work to that of research, along the main lines of investigation, whenever possible.

PUBLICATIONS.

The following publications were prepared by the Division of Chemistry during the fiscal year ended June 30, 1896:

Bulletin No. 46. Methods of Analysis adopted by the Association of Official Agricultural Chemists.

Bulletin No. 47. Proceedings of the Twelfth Annual Convention of the Association of Official Agricultural Chemists.

Bulletin No. 48. Zinc in Evaporated Apples.

RECOMMENDATIONS.

In the interests of the public service and the efficiency of the division the following recommendations are made:

1. That necessary additions in the chemical force of the division be made as soon as possible from the eligible list as determined by the United States Civil Service Commission. The above recommendation has already been acted upon, as I am credibly informed, by your request, that the Civil Service Commission will hold an examination for this purpose. It is feared, however, that by reason of the diminution of our appropriation for chemical work for the current fiscal year, amounting in all to $2,500, it will not be practicable at the present time to secure the employment of more than one additional assistant.

2. I earnestly recommend your favorable consideration of the proposition for increasing the pay of the chemical assistants of the division. It is the avowed policy of the Department to pay higher wages for expert service. I need only call your attention to the fact that there are now employed in this division chemical experts who have devoted

many years of their lives to professional studies in preparing themselves for their work and who are at the present time receiving less compensation than many persons employed in clerical work in the Department.

3. I desire again to call your attention to the fact that this division stands ready at all times to cooperate with other divisions in scientific work. During the past fiscal year many opportunities for this cooperation have been presented to us and all have been cheerfully improved. Only when the amount of work which is required is such as to seriously impair the lines of work specially undertaken by the division, is it probable that cooperation could not be accorded. In such cases the Division of Chemistry would be glad to undertake chemical work for other divisions, provided the funds of such divisions be employed for the temporary employment of experts for the purpose. The establishment of separate chemical laboratories for other divisions of the Department would tend to disintegrate the chemical work of the Department and render it more expensive and less efficient.

4. The quarters now occupied by the Division of Chemistry are entirely inadequate for the accommodation of a laboratory representing the Department of Agriculture. The rooms are small, poorly ventilated, and crowded to inconvenience. There is not a single room in the house of which the temperature can be controlled, thus making impossible a condition important in many chemical operations. About a year ago a request was made of this division for an estimate for floor space for a laboratory in the new post-office building. I would urge upon you the necessity of securing space in this building, if possible, where the chemical laboratory of the Department could be installed in a manner suitable to the magnitude of its interests and the character of its work.

REPORT OF THE CHIEF OF THE DIVISION OF VEGETABLE PHYSIOLOGY AND PATHOLOGY.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF VEGETABLE PHYSIOLOGY AND PATHOLOGY,
Washington, D. C., September 10, 1896.

SIR: I have the honor to submit herewith a report giving a synopsis of the work of this division for the year ending June 30, 1896, and an outline of the plans proposed for the current fiscal year.

Respectfully,

B. T. GALLOWAY,
Chief.

Hon. J. STERLING MORTON,
Secretary.

WORK OF THE YEAR.

During the year the work, as heretofore, has been about equally divided between the field and laboratory. The field work offers the chief means of bringing home to the farmer, gardener, and fruit grower the results of investigations carried on in the laboratory. Furthermore, it furnishes, in nearly all cases, opportunities for obtaining facts in regard to the growth and development of plants and their relation to surrounding conditions which can be obtained in no other way. As the work of the division progresses it becomes more and more evident that a sound science of plant pathology can result only from a clear understanding of the fundamental principles underlying plant growth. To obtain this the plant itself must be studied under varying conditions of soil and other surroundings that may affect its development. This is being done as far as the means at hand will permit, and wherever undertaken the results have been gratifying in the extreme.

DISEASES OF SHADE AND ORNAMENTAL TREES.

So many inquiries have in recent years been made in regard to the diseases of shade and ornamental trees that toward the close of the fiscal year the division began a series of investigations on the subject. Special attention has been given to the diseases of trees on city streets and in parks. While there are many destructive diseases due to parasitic enemies, such as fungi and insects, there are numbers of others equally as injurious in which these agents play no direct part. Lack

of proper nutrition, imperfect aeration of the soil, poisonous gases in the air and soil, etc., all play an important part in bringing about a complication of troubles often difficult to understand and more difficult to remedy. Another class of diseases which occur in cities, as well as in other places where extensive plantings are made, are those brought on by lack of knowledge as to the ability of the different species to adapt themselves to the conditions existing where they are planted. Every year vast numbers of trees die simply because they are not able to adapt themselves to conditions differing in a marked degree from those to which they and their parents have been subjected. In the case of pines the leaves will frequently turn brown, dry up, and die. This may occur only on the ends of the branches, while again the whole tree may be affected. These and other diseases are receiving attention, and it is believed that the information obtained will be of benefit to those interested in the growing of trees, a subject which is to play an important part in the future welfare of the country.

WORK ON THE DISEASES OF CITROUS FRUITS.

As in previous years, this work has been conducted mainly in Florida, where the best opportunities for studying the various maladies are to be found. The investigations which have been made upon sooty mold, die back, and other diseases have led to the discovery of remedial measures, which were pointed out in a bulletin issued during the year. The treatments recommended in this bulletin are now generally used throughout the State and have resulted in much direct benefit to the growers. This is especially true in the case of sooty mold, a serious disease, but one which is now controlled at comparatively small expense. The investigations of the more obscure diseases, such as blight and die back, have been pushed as much as time would permit.

IMPROVING THE ORANGE.

In the spring of 1894 a number of crossing and hybridizing experiments were made by the assistants in charge of the work on citrous fruits in Florida, with a view to determine the probable cause of sterility in the Navel orange and if possible to secure improved and more vigorous varieties. This work resulted in securing a number of crossed and hybrid fruits, and many interesting results as to the influence of pollen on the fruit, etc. The young seedlings from the crossed fruits, some one hundred in number, reached sufficient size to justify cutting off buds. These were inserted in a number of large twelve-year-old stocks in order to fruit them quickly and thus decide as to their merits. The trees were put in shape and budded in May. Most of the buds have now reached a height of 3 or 4 feet, and some of them will probably fruit next year. Several hundred citrous crosses were made, from which about twenty fruits are developing. Some of these are very interesting crosses and may give valuable results.

PINEAPPLE DISEASES.

Pineapple growing forms an important industry in Florida. The methods of growing the crop are so different from those practiced in growing other plants that a paper on the industry as a whole was published in the Yearbook for 1895. This paper was intended

as a preliminary step to a series of investigations of the diseases of the pineapple. This work has been carried on during the year, five or six diseases having been under investigation in the field and laboratory.

EFFECTS OF THE FREEZES OF 1894–95 ON VEGETATION IN FLORIDA.

Observations on the effects of the freezes of 1894–95 have been continued during the year, extended notes being made in all parts of the State. These observations have been directed toward determining the extent of injury sustained by the various cultivated and native plants, the best methods to use in restoring frozen groves, etc. Careful notes have been made on the hardiness of the different varieties of cultivated fruit trees, and lists prepared of hardy varieties of ornamental plants, such as palms, evergreens, bamboos, etc. It is thought that such information will be of great value in the future as a guide to planting groves and gardens.

WORK IN CALIFORNIA AND OTHER PACIFIC COAST STATES.

As heretofore, one assistant has devoted his entire time to the diseases of the grape, fruit trees, and other useful plants on the Pacific Coast. The conditions there are so different from what they are in other sections of the country that special lines of work are required in order to obtain a full understanding of the nature of the diseases and the best means of combating them. At present the assistant is located at Santa Ana, where the best facilities for both field and laboratory work are afforded. During the year a critical study of the olive has been made, the work involving the culture of the fruit and its possibilities in the United States, a discussion of varieties suitable for oil and for pickles, diseases, and other matters. Most of the time of the assistant, however, has been devoted to several destructive diseases of fruits, notably one affecting the apple in Washington and other coast States, and locally known as canker. This disease has killed many trees, but its cause is now known and the experiments made in treating it have been gratifyingly successful. In addition to the foregoing, the diseases of the vine, the English walnut, and other fruits have been further studied, and the experiments in their treatment have been continued.

DISEASES AFFECTING TRUCK CROPS, COTTON, ETC., IN THE SOUTH.

During the year the work upon a number of maladies affecting important Southern crops was continued, the principal diseases investigated being the Fusarium disease of cotton, watermelons, and cowpeas; the bacterial wilt of cucumbers, muskmelons, pumpkins, and squashes; and the bacterial brown rot of the Irish potato, eggplant, and tomato, the tomato disease being known in the South as the Southern tomato blight. The cause of each of these diseases has been satisfactorily determined, and much time has been devoted to working out the life history and physiological peculiarities of the parasitic organisms in the hope of finding clews to proper treatment, with a good degree of success. A preliminary technical bulletin on the disease of the potato, eggplant, and tomato has been prepared for publication. The investigations of the bacterial cucumber wilt are well

advanced, but not yet completed. The work on the Fusarium disease of cotton, watermelons, and cowpeas is in the least satisfactory state, judged from a practical standpoint, owing to the inability thus far to determine whether the disease is due to one, two, or three different organisms. Judging simply from the fungus as it appears on the different plants and in culture media, one would expect that mycelium derived from any one of the host plants would cause disease in the other two, but an extensive series of greenhouse experiments, begun last fall and still in progress, have yielded only negative results. If these experiments represent the actual truth, then the diseases will be easier to deal with than if all are due to one organism. Further experiments must, however, be undertaken before this can be settled.

WORK ON GREENHOUSE CROPS.

There is no class of plants that offers better opportunities for working out problems of fundamental importance than those grown under glass. Here is attained the very acme of horticultural production, and the practices followed, while largely intuitive, nevertheless constitute an art replete with scientific suggestions. In no other horticultural work are the conditions of soil, air, and other surroundings so well under control, and nowhere else are the effects of improper combinations of the factors governing plant growth so quickly seen. The work, therefore, on greenhouse plants, to which brief reference was made in my last report, has been continued, first, for the purpose of obtaining facts of direct bearing on the growth of the crops in question, and, second, to throw light on questions of general agricultural and horticultural interest. The investigations relating to the Easter lily disease have been continued, and results have been obtained which tend to show that the trouble may in part be controlled by methods of culture. There is no positive evidence to show that the disease is due to living organisms, although several of these have been found in connection with the trouble.

In addition to the lily trouble, diseases of violets, roses, carnations, and lettuce have been under investigation. In connection with this work experiments have been inaugurated to determine the effects of different soil conditions, both physical and chemical; the effects of different methods of feeding before and after planting; and the relation of other factors, such as heat, light, and water, to growth and to the production of flowers and fruit.

DISEASES OF WHEAT AND OTHER CEREALS.

Experiments to determine the rust-resistance of cereals were continued during the year, the main part of the work being done at Salina, Kans. The experiments the preceding year were carried on in Maryland, but it was found that the conditions there were not favorable for obtaining data needed to throw light on a number of the important questions. Nearly 1,000 varieties of wheats were planted at Salina, and of this number about 500 succumbed to the prolonged drought and severe cold of the autumn and early winter. This proportion of the varieties winterkilled was several times greater than took place in Maryland. Those which stood the winter best were as a rule from Russia or Japan, although a few were American varieties. About 110 varieties of oats were tested, it being shown that there

HERBARIUM.

The herbarium bears almost the same relation to the work of the division as a library, and is fully as important for reference and for records. In the main the specimens now represented in the collection are of economic importance either directly or indirectly. There is a complete index to hosts and parasites, and this saves much time when searching for information that may be called for by correspondents and in other ways. During the year the herbarium has been removed to rooms where there is more light and better opportunities to consult the specimens.

BIBLIOGRAPHICAL WORK.

It is of the utmost importance in any branch of scientific work to keep as complete records as possible of the literature bearing on the investigations in hand. Ever since the division was established this fact has been kept in mind, and all efforts consistent with the time that could be spared from office and laboratory work have been devoted to a careful, systematic index of the literature on plant diseases and allied subjects. This work has been continued during the year, but owing to insufficient clerical help it has not progressed as rapidly as the necessities and importance of the matter demand.

ROUTINE WORK.

The purely routine work, taken altogether, probably occupies one-half of the entire time of the force of the division. It consists in the care of the correspondence; editorial work in the preparation of reports, circulars, bulletins, etc.; proof reading; and other matters. The requests received which involve investigations of a scientific nature are referred for the most part to two assistants, and the greater part of their time is occupied in obtaining the data necessary for satisfactory replies. At times this work becomes burdensome and interferes with the prosecution of important special lines of investigation. It is not clear, however, how any part of it can be slighted if the division is to keep in touch with the farmer and fruit grower. The editorial work for the most part devolves upon the chief of the division and occupies a considerable part of his time. It is unfortunate, but nevertheless true, that some of the best observers and most careful workers are incapable of properly presenting their results to those most liable to profit by them. It is often a thankless task for another to attempt to do this, and yet it must be done if the work is to have its full value.

CHANGES IN THE PERSONNEL OF THE DIVISION.

There have been but few changes in the personnel of the division during the year. One assistant resigned to accept the position of horticulturist and botanist of the Alabama Polytechnic Institute, of Auburn. This place was filled by a special examination. Another assistant was granted leave of absence without pay for one year, in order to go abroad to study certain problems relating to investigations under way here.

OUTLINE OF CURRENT WORK.

The work planned for the current year consists, in brief, of a continuation of the investigations on trees and their diseases; studies of the diseases of citrous fruits and other subtropical plants; experiments in the treatment of various maladies in California and elsewhere; laboratory and field work on the diseases of cotton, melons, and other typical Southern crops; and investigations bearing on greenhouse plants and on cereals. The work on the diseases of shade and ornamental trees is planned to cover questions of nutrition, or how to properly nourish trees, especially those in cities; the effects of injurious conditions of soil and air; parasitic enemies and the best means of preventing them, etc. The principal diseases of citrous fruits that will be investigated are sooty mold, melanose, die back, foot rot, and scab.

The work on sooty mold will consist principally in a study of the entomogenous fungi attacking insects connected with the disease and experiments on methods of spreading these artificially. It is believed that the greatest advance in the treatment of the disease can be made in this direction. In the investigation of melanose it is planned to continue the study of the fungi supposed to cause the disease in connection with inoculation experiments to determine how the malady is communicated. It is intended to make a thorough microscopic study of the cellular pathology of die back. The very numerous characteristic lesions present in this make it an exceptionally favorable subject for such study. It is planned to start a series of plat experiments to determine the possibility of producing the malady by the use of excessive quantities of different fertilizers. It is well known that excessive applications of certain manures will cause the disease, but it is highly desirable to obtain more exact information as to the kinds and quantities of materials likely to bring on the trouble as a surer guide to correct manuring.

In the matter of foot rot, a badly diseased grove has been obtained, and a series of plat experiments in treating the disease with fungicides, followed by corrective manuring, will be started in the spring of 1897. The investigation of scab will consist in a further study of the pathological anatomy of the disease and culture and inoculation experiments with the fungus causing the malady. It is hoped to complete a special bulletin on this disease during the year.

The work on the diseases of pineapple will be continued, the maladies known as "spike" and "blight" being the principal ones that will be investigated. The work of developing and testing the crossed and hybrid citrous fruits obtained during the past two or three years will occupy considerable attention.

The work on the Pacific Coast will be continued mainly along the lines carried forward the past year. It is hoped to complete the investigations of apple canker and publish the results as to its cause and prevention. The results of the work on peach curl, which has also been quite successful, will be published as soon as the material can be put into proper shape.

It is planned to continue the studies on the cotton, watermelon, and cowpea disease, and on the bacterial brown rot of the Irish potato, eggplant, and tomato, both of these diseases being commercially very important. In addition studies of the bacterial wilt of cucumbers, etc., will be completed, and at the same time it is hoped to work out the life

history of a bacterium parasitic on beans, concerning which at present little is known beyond the fact that it causes at times very serious losses.

The study of a number of diseases affecting greenhouse plants is now under way, and in addition experiments are planned and are being made to determine the effects of different foods and different soils on the health, vigor, and productiveness of such crops. In connection with this work the Division of Soils is cooperating.

The work on cereals will be continued at Manhattan, Kans., in cooperation with the experiment station situated there. The number of varieties tested will be much reduced and more attention will be given to artificial crossing and improvement by selection. Inoculation experiments with the various forms of rust fungi will be continued in the greenhouse, and in addition a series of trials will be made with different fertilizers to determine their effect on the plant in its relation to rust.

REPORT OF THE DIVISION OF ORNITHOLOGY AND MAMMALOGY.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF ORNITHOLOGY AND MAMMALOGY,
Washington, D. C., July 1, 1896.

SIR: I have the honor to submit herewith a report on the doings of the Division of Ornithology and Mammalogy for the fiscal year ending June 30, 1896.

Respectfully,
C. HART MERRIAM,
Chief.

Hon. J. STERLING MORTON,
Secretary.

WORK OF THE YEAR

As in previous years, the work of the division has consisted mainly in carrying on the study of the geographic distribution of animals and plants, and in examining the contents of birds' stomachs in order to determine the nature of the food and the economic status of the various species.

Papers have been prepared and published on the food habits of the meadowlark, Baltimore oriole, catbird, house wren, and thrasher, and a special bulletin on the jack rabbits has been issued. In addition, studies have been completed of the food of the blue jay, red-winged blackbird, cowbird, shrike, and several other birds, and of the long-tailed and short-tailed shrews.

The technical work of revising the groups of North American mammals, preliminary to mapping their distribution, has received as much attention as the available time permitted. Two numbers of North American Fauna containing such revisions (No. 10 on the shrews and No. 11 on the weasels) have been completed and published, and a third (on the genera and subgenera of voles and lemmings) is in press.

BOUNTIES.

In my last report attention was called to the pernicious effects of laws providing bounties for the destruction of mammals and birds. The matter is of such importance that a compilation of existing bounty laws, with statements of the amounts paid under these laws in the various States, and of the animals on which premiums have been paid, has been prepared and will be published at an early date.

GEOGRAPHIC DISTRIBUTION.

The work of mapping the geographic distribution of mammals and birds has been continued throughout the year. Field-work has been done in Virginia, Minnesota, Wyoming, Oregon, Nevada, Lower California, Mexico, western Canada, and Alaska. The principal work of the season is in Oregon, of which State the division is now engaged in making a biological survey. This, as stated in my last report, is a continuation of work already done in other parts of the Great Basin and in the northern Rocky Mountain region.

ROUTINE WORK.

Routine work consumes a large part of the time of the office force, and, as in former years, has consisted of correspondence, attention to the needs of field agents, the tabulation and arrangement of reports and other information received, the identification of specimens, the care of collections, the preparation of reports and bulletins for publication, and of reference lists useful in the work of the division. The number of letters received during the year was about 4,000, and many of them were accompanied by schedules, reports, and notes, which were examined and filed for future reference. During the same time about 3,300 letters were written and several hundred schedules distributed to correspondents; about 200 packages were received and the same number sent out. The demand for the publications of the division is constantly increasing, and the editions of most of the earlier bulletins are now exhausted.

CHANGE OF NAME TO BIOLOGICAL SURVEY.

In the report for 1889 it was urgently recommended that a "Biological Survey * * * be established under the Department of Agriculture, and that the present Division of Ornithology and Mammalogy be merged into it." In partial compliance with this recommendation Congress at its next session (in 1890) authorized the division to undertake a comprehensive investigation of the geographic distribution of animals and plants, but made no change in the name. The investigation so authorized has been carried on up to the present time and has been made the more important of the two lines of inquiry conducted by the division. In your report for the fiscal year 1894–95 you recommended that the name be changed to Biological Survey. This recommendation met the approval of Congress and the change was made at the last session—in the bill making appropriations for the Department of Agriculture for the fiscal year beginning July 1, 1896.

It is believed that this change of name, being a recognition of a broad principle heretofore hidden under a designation implying details, will add dignity to the investigation and to the Department and will materially aid in enabling the division to carry on a comprehensive study of the distribution of life in America with reference to the adaptability of the various parts of our domain to different agricultural and horticultural products—not only those now cultivated in this country, but also those which from their importance in other lands are likely to prove of value if introduced on fit soils and in their proper life zones—and it should be remembered that we include in our own territory all of the life zones from the Tropical to the Arctic.

If it be true that by more intelligent cultivation of the land we may increase the quantity of our crops, thereby augmenting our revenues, it is also true that by the introduction of new crops and new breeds of stock we may increase the number of our products, thereby securing a check on the overproduction of single crops, to the betterment of the condition of our agricultural population. Periods of depression in agricultural pursuits emphasize the necessity of diversifying our resources. Much has been done already, but it has been done, in the main, in a haphazard sort of way and the field is only half cultivated.

Millions of dollars have been wasted in attempts to force crops to grow in unsuitable places. These failures often have the effect of discouraging experimentation with a crop which will thrive and flourish if introduced in the right agricultural belt and on the right kind of soil. What is needed is a broad, scientific study of the complicated relations of animal and plant life to the conditions under which the various species live in a state of nature. When an animal or plant is to be transported to another country, the first step should be to ascertain the life zone from which it came; the second, to place it in the same zone in its new home.

With a view to the acquisition of information and material from other parts of our own continent I am led to recommend the addition to the divisional appropriation of $5,000. This will permit of biological explorations in Central and South America. The well known richness of tropical America, not only in indigenous animal and plant life but also in certain agricultural products, would seem to warrant this small additional expenditure.

In addition to the practical outcome of the work of the Biological Survey, results of educational and scientific value are constantly accumulating. We are rapidly acquiring a more thorough knowledge of our fauna and flora than would have been possible in a century at the usual rate of progress. We are also disseminating information to meet the rapidly growing demand for trustworthy literature on the natural history of our country.

The following estimate of expenditures for the fiscal year 1897–98 is respectfully submitted:

Statutory roll	$10,060
Divisional fund	22,500
Total	32,560

REPORT OF THE OFFICE OF FIBER INVESTIGATIONS.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF FIBER INVESTIGATIONS,
Washington, D. C., August 30, 1896.

SIR: I have the honor to report on the operations for the past year and upon the proposed future work of the Office of Fiber Investigations.

Respectfully,

CHAS. RICHARDS DODGE,
Special Agent.

Hon. J. STERLING MORTON,
Secretary.

WORK OF THE YEAR.

During the first half of the year ending June 30, 1896, the special agent in charge was under detail by the Secretary on the Government Board of the Atlanta Exposition, his duties keeping him in Atlanta until about the 1st of February.

Since then the work of the division, which necessarily had not received full attention, has been brought up to date. A report on jute and hemp culture in the United States has been prepared and submitted for publication.

Work on the descriptive catalogue of the fibers of the world, which was begun nearly three years ago, has been again taken up and is being pushed toward completion. No like publication is in existence. There is an English publication treating of less than 150 species outside of the commercial fibers, and relating chiefly to Europe and India, but it is most deficient regarding the fibers of North and South America. Between 700 and 800 species of fiber-producing plants have already been enumerated. This list includes plants of North, Central, and South America, including the West Indies; Europe and Asia, including Japan and the Pacific islands; Australia and Africa. By a system of cross references definite information may be obtained from this work by referring either to the common English name of a fiber, when it has one, to its native name or names, and finally to its botanical designation, under which its history appears. The place of the plant in the vegetable kingdom is defined and its form indicated, followed by its habitat and range of distribution or cultivation; description of the fiber, showing the part of the plant from which obtained, and, where important, the economic considerations are intelligently discussed.

The many inquiries in relation to jute culture suggest the distribution of a limited quantity of jute seed this winter to a selected list of experimenters, in order to ascertain, if possible, the cost of production

and the availability of machinery to put the crop in a marketable condition. The extraction of the fiber of jute is a simple matter compared with that of ramie, and the recent improvements in machine construction may now enable Southern farmers to cultivate jute profitably, the mere question of growth having been settled. It is desirable to carry the experiment further than mere cultivation, and to include preparation of the fiber it is necessary to enlist the cooperation of those interested in decorticating machinery.

While cultural experiments with flax in the Puget Sound region have been discontinued, it is interesting to note that a ton of the flax straw sent to the Barbour Company, Lisburn, Ireland, for test in manufacture, has been likened by the Irish flax workers to the famous straw of the Courtrai flax district in Belgium, and it is expected that a very superior flax will be produced from it. Good success has attended the efforts of those who are endeavoring to establish flax culture in Minnesota, and some fine samples of retted straw of 1896 have already been submitted. Progress is being made in the industry, but there is still a great lack of information regarding the proper method of cultivating and handling among farmers, especially those who have only grown flax for seed, and this has created a large demand for Farmers' Bulletin No. 27, Flax Culture for Seed and Fiber, which is now in its fourth edition. Irrigation experiments, in relation to flax culture for fiber, are important, and it will be advisable another year to inaugurate them, as in droughty seasons, in portions of the West, this crop must be seriously injured. In Kansas experiments, with irrigation, the yield of flaxseed per acre has been doubled.

Two new ramie machines have been brought into prominence abroad during the past year, and one has recently been completed and privately tested in this country. A new process for preparing the fiber for manufacture has been recently brought to the attention of the Government of India, the merits of which are being investigated by this office. It is known as the gomess.

RECOMMENDATIONS.

Valuable fiber collections were accumulated by the Department from 1862 to 1877, including those of the Flax and Hemp Commission of 1863. Many of these specimens were scattered, between 1877 and 1881. Another large and valuable series of accumulations, that was sent to the Chicago Exposition, is now in the Field Museum and unavailable, while still later accretions, prepared for the Atlanta Exposition at the expense of the National Museum, are preserved in that institution. The Department should possess as complete a working collection of textile fibers as it is possible to obtain, as such specimens are easily preserved and do not take up much room. It is most important that the present meager collections of the Department should be made as complete as possible, by purchase and exchange, and should be properly labeled and classified, so as to form a national economic series for present and future reference.

The interest that is manifested in foreign countries in the fiber work of this Department, and the demand for its publications from abroad, which is only second to the interest in our own country, has not in the least abated.

REPORT OF THE CHIEF OF THE DIVISION OF PUBLICATIONS.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF PUBLICATIONS,
Washington, D. C., September 10, 1896.

SIR: I have the honor to submit herewith, in compliance with your order of June 27, 1896, a report on the work of this division for the year ending June 30, 1896, together with estimates and recommendations for the fiscal year ending June 30, 1898.

Respectfully,

GEO. WM. HILL,
Chief.

Hon. J. STERLING MORTON,
Secretary.

THE WORK OF THE YEAR.

PUBLICATIONS SUPERVISED.

During the fiscal year ending June 30, 1896, there were handled in this division 376 publications, as per statement following:

Publications chargeable to regular fund	240
Publications chargeable to divisional funds	25
Publications printed at Weather Bureau	36
Publications issued as executive documents	8
Publications chargeable to Farmers' Bulletin fund	67
Total	376

The number of printed pages comprised in the above publications is, exclusive of reprints, 10,170, and the total number of copies of all publications, as above, was 6,561,700.

For the fiscal year ending June 30, 1894, the number of publications issued was 205, and the total number of copies 3,169,310. In 1895 the number of publications was 254, and the total number of copies 4,100,660.

The total number of requisitions drawn upon the Public Printer, and covering, in addition to the publications, printing of all kinds, was 535, not including the requisitions drawn upon the branch printing office attached to this Department and under the Public Printer's control.

The very large figures representing the total number of copies of all publications (see preceding page) well illustrate the results of a policy systematically pursued during the present administration, viz, that of issuing short, brief, inexpensive publications, each covering a single subject or a certain phase of a subject. It was found several years ago that the issue of bulletins and reports in more pretentious form and frequently containing information on a considerable variety of subjects resulted in distributing a very large amount of information to persons not directly interested, and the consequence was a large waste of printing material. The result of a different policy is shown in a very marked degree in the figures for the past three years. During these three years the general printing fund appropriated has been the same, while the appropriation for Farmers' Bulletins was added in 1895, amounting to $30,000 that year and increased for 1896 to $50,000. Nevertheless, the number of publications and the total number of copies of such publications for each year show an increase far in excess of this addition to our printing fund.

CIRCULARS OF INFORMATION.

This very large increase is accounted for to a considerable extent by the great number of circulars of information. These have been found a cheap and effectual means of promptly diffusing valuable information, especially available in cases of emergency; moreover, as a means of satisfying inquirers, they serve as substitutes for a very large amount of correspondence which would otherwise be imposed upon the several divisions. In the appendix to this report will be found a list of these circulars by divisions, showing those which remained available for distribution at the close of the fiscal year under consideration.

THE YEARBOOK.

As usual, the most important publication of the Department, both as to size, cost and number distributed and in the diversity of matter treated, was the Yearbook, printed in accordance with section 17, paragraph 2, of the act providing for the public printing and binding and the distribution of public documents. The division of the annual report of the Department into two parts, as provided in the section referred to, was carried out for the first time in 1894. The Yearbook for 1895, which, thanks to the energy of the Public Printer, was this year ready for delivery in June, 1896, is, therefore, only the second publication of this character, and in general style and character conforms in the main to the plan of the same publication for 1894. It is gratifying to know that this change in the form of the annual report has been very generally hailed with satisfaction and meets with warm approval on all sides. The unfortunate commingling under the old style of report of administrative business, scientific subjects, and popular information resulted in a book which was not satisfactory to anyone. The selection of matter for the Yearbook has been from the beginning under the immediate supervision of the Assistant Secretary, and under his direction steps have already been taken toward the Yearbook for 1896, which it is thus hoped will be ready for distribution even earlier than was that for 1895.

INDEX TO THE ANNUAL REPORTS.

During the past year there was completed in this division and published an index to the annual reports of the Department from 1837 to 1893, inclusive. This work had been undertaken during the previous fiscal year, and is referred to on page 229 of the 1895 report. As the work progressed, it was found impossible to confine it to the limits therein indicated, although the greatest effort was made to keep it within the narrowest bounds. As finally completed, the work contains 252 pages and about 13,000 entries, with over 20,000 references.

The size of the work limited the edition to 1,000, but in this case, the index being wanted chiefly by the Department workers themselves, the agricultural colleges and stations, and the various libraries supplied with the Department's publications, this number was found sufficient. The work is a great convenience to those having to consult these reports, which in years gone by contained almost all of the published matter of the Department. The indexing of all the publications of the Department continues to be urgently needed.

SOME OBJECTIONABLE SECTIONS IN THE PRINTING BILL.

In response to urgent requests from organizations devoted to the improvement of agriculture to be allowed a large number of various publications of the Department for distribution in their several localities, and for which they proposed to pay, an effort was made by this Department to secure an amendment to section 42 of the printing law, which limits to 250 the number of copies of any publication which the Public Printer is authorized to furnish applicants; also to secure a modification of section 52, which prescribes that the Public Printer shall sell to any person or persons who may apply additional stereotype or electrotype plates of any Government publication "at a price not to exceed the cost of composition, the metal and making to the Government, and ten per centum added." In most cases the applicants were directors of experiment stations, and the number of copies desired was from 1,000 to 5,000, the cost of which they were quite willing to pay. Under the restrictions of section 42 referred to this was impossible. In one or two cases this led to a proposal to purchase electrotype plates, from which they might print for themselves as many copies as they might want. Of course, when the cost of such plates was figured up, as provided in section 52, including composition, it was found that nothing would be gained, but on the contrary the cost of reproducing the desired publication would be increased. The following letter was therefore addressed to the chairmen of the Committees on Agriculture of the Senate and House, respectively, and to the chairman of the Committee on Printing of the House:

SIR: I desire to call your attention to certain restrictions and obligations imposed upon the Public Printer by sections 42 and 52 of the act providing for the public printing, approved January 12, 1895, which interpose a very serious obstacle to effective cooperation between this Department and the agricultural colleges and experiment stations and State or national associations organized for the purpose of promoting agricultural interests.

Section 42 restricts the number of copies of the documents which the Public Printer may furnish to applicants giving notice before the matter is put in press to 250. Under section 52 he is required to sell to persons applying therefor duplicate

stereotype or electrotype plates of any Government publication "at a price not to exceed the cost of composition, the metal and making to the Government, and ten per centum added."

It very frequently happens that the agricultural colleges, the experiment stations, and in some cases agricultural societies or State or national associations apply to this Department for an ample supply of some of its publications, giving reasons for their requests, which satisfy the Secretary of Agriculture, that their proposed distribution of the documents asked for is strictly in line with the object for which they were issued and would greatly extend their influence and, what is sometimes of extreme importance, hasten the propagation of the information our reports contain among the very people likely to be most benefited. Many of these applicants profess themselves willing and able to pay for the documents they want; but the restrictions imposed upon the superintendent of documents under section 61 of the law already quoted, which provides that "only one copy of any document shall be sold to the same person, excepting libraries or schools by which additional copies are desired for separate departments thereof, and Members of Congress," and the provisions of sections 42 and 52 already cited, make it impossible to thus accommodate them.

It seems to be clearly in the interest of public policy that ample facilities should be accorded to any organization of a reputable and public-spirited character, to State officers, and especially to the agricultural colleges and experiment stations who are already, under the Morrill and Hatch acts, large beneficiaries from the Federal Treasury. During the past year this Department has had such requests for thousands of copies of its publications with expressions of a perfect willingness to pay the cost of them, and there seems to be no good reason why the restrictions imposed by the act of January 12, sections 42 and 52, should hold in such cases, thereby obstructing the prompt and intelligent diffusion, by legitimate means, of valuable information which the Government has spent much time and money in obtaining for the benefit of the country at large.

I have the honor, therefore, to submit to you the above considerations, and to invite you, should you concur in their reasonableness, to confer with the Senate Printing Committee with a view to some modification of section 42 by which the limitation as to numbers to be supplied by the Public Printer should not be restricted in such cases as I have referred to above, and where the applications are approved by the Secretary of Agriculture; also, by the addition to section 52 of a provision that in such cases and on the approval of the Secretary of Agriculture stereotype or electrotype plates of our publications may be supplied at a price not to exceed the cost of the material and making to the Government and 10 per cent added, thus relieving the applicant from the heavy charge for composition.

I have the honor to remain, sir, yours, very respectfully,

CHAS. W. DABNEY, Jr.,
Acting Secretary.

The above letter was dated May 27, 1896, and a copy thereof was at the same time sent to the Public Printer, inviting his attention thereto and asking his cooperation in securing a modification of the restrictions contained in these sections of the printing bill. Unfortunately that official felt it to be his duty to oppose these proposed modifications as liable to interfere with the work of the important office under his control. Under the circumstances no remedial action was obtained. In view of the great and, on the whole, wise restrictions placed upon the free distribution of our publications under the printing law already referred to of January 12, 1895, it seems extremely desirable that some means should be found of gratifying such institutions or associations as are willing at their own expense and for the benefit of their members or constituents to further the work of this Department in diffusing as widely as possible the information it publishes. The cases in which such demands are made upon us are not numerous, but they are extremely urgent, and it does seem as if some further effort should be made to secure a modification of these restrictive sections under such conditions as would guarantee the Public Printer against interference with the work of his office, if the approval and concurrence of the Secretary of Agriculture and his right to use his own discretion in accepting or refusing these requests as proposed, be not in

his opinion sufficient. In every such case hitherto the purpose and intention of these applicants for our publications were unquestionably such as deserve the utmost encouragement on the part of the Government.

LIMITATION OF EDITIONS TO 1,000 COPIES.

The restriction by which the issue of any publication exceeding in size 100 octavo pages is limited to an edition of 1,000 copies has been in force nearly two years. It has been found irksome and inconvenient. The fact that promiscuous free distribution is, under section 67, prohibited and that documents not required for official use have to be turned over to the superintendent of documents renders further restrictions unnecessary, and it is evident that occasions when the requirements for official use exceed 1,000 copies may occur quite frequently in the case of publications exceeding 100 octavo pages as the case of those having a less number. Moreover, the publications exceeding 100 octavo pages are exceedingly few. Aside from the Year-book and the annual reports of the Weather Bureau and Bureau of Animal Industry, which are not affected by the above restriction, only four publications of this Department out of 376 issued last year exceeded in size 100 octavo pages. In each case the restriction not only caused grave inconvenience, but compelled the Department to break faith with correspondents to whom a copy of the work had been promised in return for special services, nor was there a supply for sale equal to the demand.

BRANCH PRINTING OFFICE.

The work of the branch printing office of the Department, transferred to the control of the Public Printer under section 21, act of January 12, 1895, has remained under the supervision of the chief of this division, as per your order of February 14, 1895. At the close of the last fiscal year the work done under the new order covered a period of less than six months. The estimate made at the close of that period, however, as to the yearly cost of this office has been unfortunately realized, aggregating for the last fiscal year $16,0[illegible]9.34, the number of requisitions drawn upon the branch office being 1,237, a very considerable increase by comparison with the number for the year previous. So far the reading of all the first proofs of the work done in that office has devolved upon a member of the force of this division. This amounts to a considerable tax upon our limited force. There being now no other fund from which it can be defrayed, the entire cost of this office is chargeable to the general printing fund of the Department. The amount of this fund actually available for the general work of publications outside of brief circulars is therefore actually considerably less than it was for the fiscal year ended June 30, 1894.

INCREASE IN PRINTING FUND NEEDED.

The plea for a printing appropriation of $100,000 for the use of this Department is therefore earnestly reiterated. It was found necessary during the course of the last year to hold up a considerable amount of printing and to retard several important and timely bulletins owing to the limited amount of the appropriation, and this in spite of the fact that every available means has been adopted to bring about

economy in the administration of the printing fund. It must, however, be remembered that beyond the adoption of the most economical form possible, the only measure of economy available is the limitation of the circulation. Much has been done in this direction by rearranging the distribution so as to avoid waste, and the effect of the printing bill of January 12, 1895, under section 67 of which all publications not required for our official use are turned over to the superintendent of documents, by whom they are sold at cost, has also been very helpful; still the major part of the cost in most cases is in the composition, which is the same whether the edition be 1,000 or 20,000.

SALE OF PUBLICATIONS.

By the act of January 12, 1895, providing for the printing and binding of public documents, the office of superintendent of documents was created. This officer was authorized to sell at cost any public document in his charge; to him was intrusted the general distribution of all public documents, and to his custody also were committed all documents subject to distribution "excepting those printed for the official use of the Executive Departments." Furthermore, under section [illegible] it is provided that "all documents at present remaining in charge of the several Executive Departments, bureaus, and offices of the Government, not required for official use, shall be delivered to the superintendent of documents, and hereafter all public documents accumulating in said Departments, bureaus, and offices, not needed for official use, shall be annually turned over to the superintendent of documents for distribution or sale."

In the absence of any definition of the term "official use" the instructions conveyed under the sections of the law just quoted are somewhat vague, and it became necessary, in order to carry out the law, to adopt such an interpretation of the term "official use" as seemed to be compatible with the best interests of the Department work. Under this interpretation it was decided that the term should include free libraries of a certain size, certain of the officials of foreign and of State governments, scientific institutions, agricultural colleges, and any associations either actively cooperating in the work of the Department or supplying it with valuable publications in exchange, and including a large number of foreign institutions, and finally persons coming under the head of cooperative correspondents, who as such render to the Department some service which properly entitles them to receive certain of its publications in return and whose cooperation is frequently essential to the prosecution of special lines of work. It is, moreover, occasionally necessary to utilize a Department publication as a substitute for long and tedious correspondence. Such a distribution as described above is made the basis for the edition of each bulletin ordered, with the exception of the Farmers' Bulletins, the distribution of which is controlled by a special law, which practically makes them free to all applicants. After due consideration it was concluded to be undesirable to withhold any surplus copies from the superintendent of documents until the close of each fiscal or calendar year, the demand for such documents beginning with and sometimes preceding the appearance of a publication, as soon as the same is announced through the agricultural and other papers. It was consequently decided that a sufficient number should be ordered of each bulletin to allow of turning over to the superintendent of documents as soon as issued at least 100 copies.

The superintendent of documents having decided that all documents so turned over to him "for distribution or sale" must be sold, measures were taken to widely publish the fact and to facilitate the sale of the publications of this Department.

A careful account was taken of the bulletins on hand, and a list, which appears in the appendix to this report, was prepared of all publications of which a sufficient number remained on hand beyond what was deemed necessary for official use, to turn over a reasonable supply to the superintendent of documents. The price affixed by that officer to the several publications having been ascertained, it was duly indicated on the list in question, of which many thousands have been printed and distributed to persons asking for the bulletins of the Department. The same method is followed in the Monthly List of Publications, which is sent to all applicants and of which 8,000 are now issued every month. By this means, the list being of a descriptive nature, the several publications issued each month by the Department, their title and character, as well as the price charged for those which are not distributed free, are made known to all persons sufficiently interested to request the receipt regularly of this monthly list. The price charged by the superintendent of documents is, by section 61 of the law of January 12, 1895, fixed at cost, "said cost to be estimated by the Public Printer and based upon the printing from stereotype plates." The price demanded for the publications of the Department of Agriculture is, therefore, trifling, and, with the means taken to announce the various publications to all persons interested, this plan of distribution can not be said to place any undue restrictions upon the distribution of the information which it is the purpose of this Department to diffuse. Selling these publications has been urged in the annual reports of this division beginning as early as 1891, and it is gratifying to know that the suggestion has received your warm approval. It is obvious that under no circumstances would it be feasible to supply every farmer with every bulletin issued by the Department in which he might be interested; and such being the case, the only equitable method is to require every applicant to pay the cost price, except those who by service rendered have earned the right to receive them free. Moreover, by charging such a nominal price a great waste of public documents can be prevented. How cheaply the publications of the Department may be obtained can be seen by reference to the list of publications for the year just ended, in which the price affixed by the superintendent of documents is given, and also by the price list of the documents remaining on hand actually turned over to that officer. Through the courtesy of the superintendent of documents a report of the publications sold up to June 30, 1896, appears in the appendix to this report. The total number was 2,818, for which the sum of $353.10 was received. It should be said that the number to be turned over as above was fixed at 100 copies owing to the inability of the superintendent of documents, for want of room, to receive all that we were prepared to turn over to him. In the meantime it becomes necessary to direct your attention to the totally inadequate, insecure, and unsuitable storage facilities allotted to the publications of this Department, many of which are increasing in value as time goes on. Apart from the great danger of their total destruction by fire, owing to the inflammable nature of the structure in which they are stored, it is hardly possible to so store them as to justify the exacting of absolute responsibility for their safe-keeping from the person who has them in charge.

COST OF PRINTING AND BINDING.

The following statement shows the apportionment of the printing fund among the several bureaus and divisions of the Department, and also the amount of the special funds drawn upon for publications:

Statement of printing account—Expenditures by divisions.

Accounts		$414.85
Agricultural soils		1,633.85
Animal industry	$1,894.57	
Animal industry (special)	3,537.82	
		5,432.39
Agrostology		632.60
Atlanta Exposition		3,215.84
Botany	595.72	
Botany (special)	2,618.10	
		3,213.82
Chemistry		1,656.04
Entomology	2,710.72	
Entomology (special)	7.32	
		2,718.04
Experiment stations		13,510.92
Fiber investigations		295.80
Folding room		32.75
Foreign markets		5,571.98
Forestry		1,852.25
Irrigation		28.90
Library		3,568.59
Ornithology and mammalogy	2,490.71	
Ornithology and mammalogy (special)	90.96	
		2,581.67
Pomology		2,126.60
Publications		826.91
Road inquiry	1,309.04	
Road inquiry (special)	1,747.23	
		3,056.27
Stationery room		104.90
Statistics		10,597.88
Vegetable physiology and pathology		1,630.84
Weather Bureau		3,815.16
Miscellaneous		3,841.17
Farmers' Bulletins		24,546.75
Branch printing office		13,335.47
Total		110,371.06
Charged to regular printing fund	77,822.88	
Charged to Farmers' Bulletins	24,546.75	
Charged to division funds	8,001.43	
Total		110,371.06

FARMERS' BULLETINS.

The total amount paid during the year for printing Farmers' Bulletins was, from the special appropriation $24,546.75, and from the general printing fund $192.91, the total number of copies printed during the year being 1,891,000. Of this number there were supplied to Senators, Representatives, and Delegates in Congress 1,316,695. The number of new bulletins printed was 13. These aggregated 940,000 copies, or nearly half of the total number of copies printed, the remainder consisting of reprints of 18 different bulletins. The average cost per copy of the Farmers' Bulletins printed during the year was a fraction over 1 cent and 3 mills.

The popularity of this series of bulletins continues unabated, and their usefulness is unquestioned. The great increase in the number printed, and especially in the number distributed to Congressmen, makes it essential that the appropriation therefor for the ensuing fiscal year, which will include the first session of a new Congress, should be maintained at least at the present figure. The handling and addressing of such large quantities of pamphlets involves a great deal of labor, each one taking as much time as far more pretentious documents. During the past year there has been expended, in addition to the amount for printing, the sum of $14,281.96 for the preparation of special bulletins and for labor and material in distribution. It is believed that under the plan adopted for the present year, by which all document distribution of whatever kind shall be concentrated and performed by one force under one management, a considerable aggregate saving will be effected. Nevertheless, in the estimates submitted it has seemed wise to set aside toward defraying cost and labor of distribution $10,000 of the $50,000 asked for for Farmers' Bulletins, leaving $40,000 to be devoted exclusively to preparation and printing. It is not probable that the cost of printing can be reduced, a minimum in that direction having been practically attained, while there is every probability that the total number to be printed the ensuing fiscal year will reach a total of at least 3,000,000 copies. So many, at least, must be provided for.

The following is a statement of the total number of Farmers' Bulletins issued during the year, giving the titles and number of copies of each printed:

Farmers' Bulletins printed and distributed to Congressmen during the fiscal year ended June 30, 1896.

Name of bulletin.	Total number printed.	Number distributed to Congressmen.
Published in 1895-96.		
No. 29.—Souring of Milk and Other Changes in Milk Products	135,000	61,332
No. 30.—Grape Diseases on the Pacific Coast	45,000	7,632
No. 31.—Alfalfa, or Lucern	110,000	50,346
No. 32.—Silos and Silage	105,000	44,552
No. 33.—Peach Growing for Market	60,000	34,725
No. 34.—Meats: Composition and Cooking	50,000	19,604
No. 35.—Potato Culture	105,000	48,476
No. 36.—Cotton Seed and Its Products	60,000	9,600
No. 37.—Kafir Corn: Characteristics, Culture, and Uses	40,000	16,955
No. 38.—Spraying for Fruit Diseases	40,000	15,422
No. 39.—Onion Culture	40,000	14,133
No. 40.—Farm Drainage	50,000	----------
No. 41.—Fowls: Care and Feeding	100,000	----------
Reprints.		
No. 3.—The Culture of the Sugar Beet	30,000	29,635
No. 6.—Tobacco: Instructions for Its Cultivation and Curing	30,000	46,087
No. 7.—Spraying Fruits for Insect Pests and Fungous Diseases, with a Special Consideration of the Subject in its Relation to the Public Health	----------	3,196
No. 9.—Milk Fermentations and Their Relations to Dairying	----------	634
No. 11.—The Rape Plant: Its History, Culture, and Uses	19,000	15,128
No. 12.—Nostrums for Increasing the Yield of Butter	----------	1,578
No. 14.—Fertilizers for Cotton	35,000	42,274
No. 15.—Some Destructive Potato Diseases: What They are and How to Prevent Them	30,000	67,880
No. 16.—Leguminous Plants for Green Manuring and for Feeding	40,000	50,942
No. 17.—Peach Yellows and Peach Rosette	20,000	23,269
No. 18.—Forage Plants for the South	35,000	32,278
No. 19.—Important Insecticides: Directions for Their Preparation and Use	65,000	54,345
No. 20.—Washed Soils: How to Prevent and Reclaim Them	20,000	41,960
No. 21.—Barnyard Manure	100,000	95,263

Farmers' Bulletins printed and distributed to Congressmen, etc.—Continued.

Name of bulletin.	Total number printed.	Number distributed to Congressmen.
Reprints—Continued.		
No. 22.—The Feeding of Farm Animals	130,000	137,738
No. 23.—Foods: Nutritive Value and Cost	90,000	61,307
No. 24.—Hog Cholera and Swine Plague	120,000	141,538
No. 25.—Peanuts: Culture and Uses	22,000	19,520
No. 26.—Sweet Potatoes: Culture and Uses	35,000	40,828
No. 27.—Flax for Seed and Fiber	25,000	18,264
No. 28.—Weeds; and How to Kill Them	105,000	70,254
Total	1,891,000	1,316,695

	Copies.	Cost.
Printed and paid from Farmers' Bulletin fund	1,881,000	$24,546.75
Printed and paid from general printing fund	10,000	192.91

In addition to the above statement there is included in the appendix to this report a statement of the various Farmers' Bulletins actually available for distribution at the close of the fiscal year.

ILLUSTRATIONS AND ENGRAVINGS.

During the year eight persons, seven artists and one clerk, have been employed under the fund appropriated for illustrations and engravings. Of these, all but two of the artists regularly employed have been assigned continuously to work in some special division under the supervision of its chief. The force thus left available for the use of divisions not having any special artists was found too small, and from time to time during the year it became necessary to make special contracts for certain work. Where the additional work required is not sufficient to occupy the entire time of one person constantly that is the only method available, but it is usually unsatisfactory, and as the work of the divisions continued to increase it was found desirable to make a permanent addition to the force. A special examination was therefore asked for from the Civil Service Commission. The request was duly granted and an examination held after the close of the fiscal year under consideration, as the result of which an appointment has been made.

The total appropriation for this line of work was $15,000; of this amount $12,116.53 has been actually expended, while contracts amounting to $869.18 are still outstanding, leaving a balance unexpended of $2,014.29. Of this amount $7,955.80 was paid in salaries.

A statement is appended showing the expenditures chargeable to each of the several divisions.

Statement of expenditures for illustrations by divisions, etc.

Agricultural Soils	$318.99
Agrostology	1,677.43
Animal Industry	1,253.39
Biological Survey	1,209.80
Botany	75.95
Chemistry	12.06
Entomology	853.05

Statement of expenditures for illustrations by divisions, etc.—Continued.

Experiment Stations	$696.10
Foreign Markets	6.19
Forestry	2,234.52
Illustrations, material, etc	1,833.64
Irrigation	26.91
Pomology	2,175.27
Road Inquiry	80.38
Statistics	12.80
Vegetable Physiology and Pathology	485.17
Weather Bureau	34.06
Total	12,985.71

In the estimates made for this line of expenditure for the ensuing fiscal year allowance has been made for the occasional employment of additional assistance for editorial work, proof reading, and indexing, etc., there being at the present no special fund from which such help can be paid however urgent its employment may become. The large increase in the amount of publication work for the past three years renders it essential that some provision should be made for such additional assistance if necessary. At the same time the nature and extent of such increase in the future can not be so absolutely estimated for a period so far ahead as to justify any fixed additions to the statutory roll. Indeed, it is the general experience of those who have had the best opportunities of judging that the statutory roll should be kept within the narrowest limits possible. It is otherwise cumbersome and wasteful and the fruitful source of inequality in salaries. For that reason it seems wise to enlarge the appropriation for "illustrations and engraving" to cover "illustrations and additional editorial assistance when necessary." A further increase in the amount of this appropriation will be rendered necessary should the intention be carried out of eliminating from all other division appropriations a provision for illustrations, artists, or engravings, etc. Unquestionably, so long as the requisitions for all work of this kind call for the concurrence of the chief of this division, and inasmuch as it is difficult to avoid occasional misunderstanding in the Division of Accounts and Disbursements as to the particular fund to which work of this character should be charged, while there are several funds to which it may be charged, a considerable saving of time and trouble would be effected both in this division and in the office of accounts were the entire amount appropriated for this class of work included under one head.

SECURING ILLUSTRATIONS WITHOUT CONTRACT.

In the matter of illustrations, one more point calls for earnest consideration and a modification of our present methods. Securing illustrations is a matter which calls for methods of procedure widely different from those which may be satisfactory as regards purchasing ordinary supplies. Economy dictates the rigid restriction of illustrations in our publications to cases where the text is inadequate to exactly present to the reader's mind without illustration that which the author finds it necessary to convey, but this very principle which should guide us in the matter of illustrating Government publications calls for the very best work adapted to each particular case. In scientific publications absolute exactness is essential to perfection in illustration, and much, therefore, depends upon our availing ourselves of every

improvement in the work of reproduction. Not only that, but it often happens that even in the illustration of one publication different processes must be used for different illustrations if each is to be reproduced in the best manner possible. It also frequently happens that one firm affords a guarantee of excellence under one method of reproduction while inferior to others in other processes. To obtain the best results there must be a certain latitude allowed in giving out the work, and the present method of calling for estimates, even in the case of comparatively trifling expenditures, not only occasions sometimes a most inconvenient delay, but frequently compels us to try a comparatively new man when we could have placed the order with one from whom we could as the result of actual experience have anticipated and secured absolute excellence. Moreover, we ought to be at liberty to place work with any firm adopting a new process or any improvement in processes already existing which promises better work. For these reasons it is earnestly recommended that no contracts for the illustrations work of the Department be made beyond the mere electrotyping and photo-engraving. All half-tone and hand-finish work, lithographing, etc., should call for a separate award in each case, and calling for estimates should not be obligatory in cases where the cost is not likely to exceed $100.

THE EXHIBIT AT THE ATLANTA EXPOSITION.

In accordance with the plans of the Department for a complete and comprehensive exhibition at Atlanta illustrative of its work, this division was charged with the duty of designing and preparing an exhibit illustrating the publication work of the Department. Fortunately the effort made at the time of the Chicago Exposition to secure a complete set of the publications of the Department, in addition to the single set in the library, which of course can not be allowed to leave the Department, although unsuccessful at that time, had in the meantime achieved the desired object, and our Exhibit No. 1 consisted of a complete set of the publications of the Department from its inception as a section of the Patent Office (1837) to and including 1895, arranged by bureaus and divisions and distinctively bound. Exhibit No. 2 included publications of the Department in divisional groups designed for reference and examination of visitors. Exhibit No. 3 consisted of Farmers' Bulletins. This case was kept supplied with these bulletins throughout the exposition for miscellaneous distribution. In Exhibit No. 4 it was sought to give a practical illustration in bookmaking, using the Yearbook of the United States Department of Agriculture for 1894 as an example. This exhibit illustrated the various processes of work from the submission of the manuscript to the completed volume, including illustrations in various forms from the original drawing to the finished reproduction. This case also included a bound copy of the first publication of the Department of Agriculture and a handsomely bound set of Farmers' Bulletins from Nos. 1 to 27. Other exhibits included portraits of ex-Secretaries Norman J. Colman, J. M. Rusk, and the present Secretary, Mr. J. Sterling Morton, of whom also an admirable bust by a promising young artist of Washington was exhibited. Finally, there were shown, in swinging frames, drawings and paintings, the work of the various artists in the Department.

In this connection it is proper that grateful acknowledgment should be made of valuable assistance in providing exhibits illustrating the various processes of the work of reproducing original drawings to the

following firms, who kindly prepared with considerable pains and trouble exhibits which they placed at our disposal for the purpose: Messrs. A. Hoen & Co., Baltimore, Md., and the Heliotype Printing Company, Boston, Mass.

SUGGESTIONS AND RECOMMENDATIONS.

DISTRIBUTION OF DOCUMENTS.

Under the appropriation act for the present fiscal year all provision for the distribution of documents outside of the statutory force of the document and folding room was included under the Division of Publications, the appropriation reading "For the preparation, printing, illustration, publication, and distribution of bulletins and reports, $70,000," which sum was subdivided to cover Farmers' Bulletins, illustrations and engravings, and distribution of documents. This necessarily divided the force engaged in the distribution of documents, all the cost of distribution of Farmers' Bulletins being payable from this appropriation, and all material required in the distribution of documents of every sort being likewise so payable, while at the same time the statutory force provided for the document and folding room consists of only eight persons, a force quite insufficient to do the work of distribution in view of the enormous number of documents to be distributed, and which has, therefore, to be supplied with additional help. Moreover, for wrapping paper, envelopes, and other necessary material for distribution, no provision is made excepting the general appropriation for the Division of Publications. The state of things resulting from this complication threatened to be extremely irksome and inconvenient, compelling a separation of the force engaged in doing the same work as well as a division of authority which must inevitably *conduce to waste and inefficiency. In consequence it was found* necessary to place the document and folding room with its force under the control of the chief of the Division of Publications. This was done by the following order:

JULY 1, 1896.

To whom it may concern:

The document and folding room of the Department of Agriculture is hereby placed in charge of the chief of the Division of Publications of the said Department, to whom the superintendent, clerk, and all folders of that room will report for duty.

D. MACCUAIG,
Chief Clerk.

It becomes necessary, therefore, to include in this report some outline of the plans for the distribution of documents for the next fiscal year, and to submit recommendations and estimates for that work in the future. In adopting any plans for this work at the present time it is necessary to bear in mind the fact that under the provisions of the printing bill of January 12, 1895, and in furtherance of your views as to the distribution of public documents, an entirely new system has been adopted and must be systematically and carefully carried out. The importance of the distribution of documents lies chiefly in the fact that this work provides the only channel through which the information acquired in the Department for the benefit of agriculture can be diffused among the persons who are to be benefited, as provided in the organic law creating the Department itself. In so far,

then, as the distribution of these documents is judicious, careful, and prompt, or the reverse, just in so far is the mission of the Department a success or otherwise. It is, moreover, of special importance that a great Department of the Government should show itself systematic and business like in its relations with the general public, and in the distribution of its more than 6,000,000 documents yearly this Department reaches directly not only a larger constituency than is directly reached in any other line of its work, but a larger constituency no doubt than is reached directly by any other Department of the Government.

In carrying out the work during the ensuing year, our first efforts must be directed to careful supervision of the several lists with a view to carrying out your instructions, which confine the distribution to those bulletins or reports required for "official use" only, to prevention of waste and avoidance of promiscuous free distribution, and finally to extending as widely and promptly as possible a knowledge of our several publications, their purpose and character, and the means by which they may be obtained. To do this effectually it will be necessary to greatly extend the list of recipients of the Monthly List of Publications and practically to open up an account with every bulletin published, with the exception of the Farmers' Bulletins, the distribution of which still remains free, as provided by law. The distribution of these bulletins entails, also, considerable account keeping, it being necessary to open a ledger account with every Senator and Representative availing himself of them. In addition to the Farmers' Bulletins a very large increase of work has devolved upon the force distributing the publications by the wise and so far highly satisfactory policy already referred to, viz, the increase in the number of circulars of information as a means of diffusing information. The increased labor devolving upon the distributing force by reason of these modifications in the form of publications, or rather by an increase of certain particular forms of publication, is readily shown by comparative figures of the total number of copies of bulletins distributed during the past three years. For the fiscal year ending June 30, 1894, 205 publications issued aggregated 3,169,310 copies; for the fiscal year ending June 30, 1895, 254 publications aggregated 4,100,660 copies, while for the fiscal year ending June 30, 1896, 376 publications aggregated 6,561,700 copies. When it is remembered that a wrapper has to be provided for each one of these publications and that almost as many addresses have to be written as there are copies of the various publications distributed, it will not be surprising that in the estimates for the next fiscal year some enlargement in the document and folding room force has been proposed, to be appropriated for as a section of the Division of Publications, and that more money is asked for the additional labor which may be found necessary as well as for the materials used in distribution. The intelligent distribution of this enormous mass of documents involves a large amount of clerical work quite apart from the mere labor of handling the documents themselves. Several of the mailing lists are kept in the document room, and a close supervision will be required of all of them, while the correspondence to be disposed of amounts to hundreds of letters per day. The adoption of the new methods referred to in the manner of distribution, moreover, renders a disposition of this enormous correspondence especially onerous, involving a constant writing of letters of explanation, the cases in which under the present law the applicants' requests can not be complied with being very numerous.

GROWTH OF THE WORK.

Inasmuch as the estimates for the expenses of this division for the ensuing year show a considerable increase over previous years, it seems desirable to add to the information already afforded by this report some comparative figures which should greatly help to determine the reasonableness or otherwise of the estimates presented for your consideration.

It has already been shown in this report that by comparison with the fiscal year ending June 30, 1894, the first year for which the general printing fund was raised to its present figure, $85,000, the increase in publications and the total number of copies of the same in the fiscal year under consideration was in number of publications 171, and in total number of copies 3,392,390 (over 100 per cent). These figures present very forcibly the necessity for increasing the provision necessary to meet the demands for publications and for documents likely to occur in spite of all reasonable limitations during the year ending June 30, 1898.

A table is here presented showing the work done and the amount of the appropriations for the several fiscal years ending June 30, 1891, 1894, and 1896. This table shows very clearly that the closest economy has characterized the conduct of the work, but it must be admitted that the work of distribution demands for the future more thorough and systematic methods than were possible heretofore, and, as already explained, the conditions imposed under the new law must be met by adequate measures and improved service.

Statement showing appropriations and work done in the fiscal years ending on the 30th day of June, 1891, 1894, and 1896.

ITEMS.	1891.	1894.	1896.
Records and editing (statutory roll)	$5,800	$6,300	$8,300
Document and folding room (statutory roll)	8,400	8,460	7,040
Materials	2,000	2,000	2,000
Illustrations and engravings (statutory roll)	17,000	17,000	15,000
Materials	2,000	2,000	
	35,200	35,760	32,340
Printing appropriation	47,000	85,000	85,000
Branch office	5,400	5,400	5,400
Farmers' Bulletins			50,000
Total	87,600	126,160	172,740
Number of publications issued	124	205	376
Total number of copies printed	2,348,447	3,169,310	6,561,700

For Farmers' Bulletins no appropriation existed until 1895, and the cost of the distribution has been mainly defrayed out of the special appropriation therefor; but even if the sum of $10,000 be added for the cost of distribution and deducted from total printing as a fair estimate of the additional expense due to the distribution of Farmers' Bulletins, we will have the following comparative figures of cost and work:

ITEMS.	1891.	1894.	1896.
Appropriations for editing, illustrating, and distributing	$35,200	$35,760	$42,340
For printing	$52,400	$90,400	$130,400
Work turned out:			
Publications	124	205	376
Number of copies	2,348,447	3,169,310	6,561,700

That in the year 1896 the cost of the editing, illustrating, and distribution of documents did, including the amount properly charged for distribution of Farmers' Bulletins, exceed by only $7,140 the amount required for the same work in 1891, certainly justifies some self-congratulation on the score of economy and good management.

As may reasonably be conjectured, the office force during the past year has been considerably overtaxed, but while every special emergency calling for extra hours or the sacrifice of well-earned leave has been cheerfully met, it is not reasonable to depend upon a regular continuance of such extra efforts, nor to fail to make suitable provision for the considerable increase of work which will have to be disposed of next year. The extent of such an increase can not, of course, be closely estimated, but a comparison of the work done in the year 1894 should afford a fair basis at least for estimating what will be required in 1898 by comparison with 1896.

FURTHER RECOMMENDATIONS.

With reference to two recommendations urged in my last report, namely, increased accommodations and the appointment of an advisory board on orthography, it is sufficient to state that every argument then offered in support of them deserves reiteration with increased emphasis in the light of an additional year's experience. The need of more room is patent to anyone who realizes that in the room where proof reading and indexing and editorial work are being carried on, two typewriters are constantly and a third one is occasionally in use, while the entire business inseparable from receiving and disposing of not less than (including illustrations) two thousand orders for work during the year, has to be transacted in that same room.

APPENDIX.

CIRCULARS OF INFORMATION.

[Available for distribution June 30, 1896.]

BUREAU OF ANIMAL INDUSTRY.

Circular No. 1.—Simple Directions for the Sterilization of Milk. P. 1, figs. 2.
Circular No. 2.—Wheat as a Food for Growing and Fattening Animals. Pp. 4.
Circular No. 3.—A Nodular Tæniasis in Fowls. Pp. 4, figs. 2.
Circular No. 4.—Crossing Improved Breeds of Swine with the Common Hogs of Florida. Pp. 3.
Circular No. 5.—The Direct Transmission of Infectious Entero-hepatitis in Turkeys. Pp. 8.
Circular No. 6.—Black Quarter. Pp. 4.
Circular No. 7.—Actinomycosis, or Lumpy Jaw. Pp. 4.
Circular No. 8.—Injuries to Cattle from Swallowing Pointed Objects. Pp. 4.
Circular No. 9.—Check List of the Animal Parasites of Chickens (*Gallus domesticus*). Pp. 7.
Circular No. 10.—List of State Dairy Commissioners and Associations of Dairymen in the United States and Canada for 1896. Pp. 6.

DIVISION OF AGROSTOLOGY.

[See also Division of Botany.]

Circular No. 1.—A Note on Experimental Grass Gardens. Pp. 4.
Circular No. 2.—Hairy Vetch, Sand Vetch, or Russian Vetch (*Vicia villosa*). Pp. 4, figs. 1.
Circular No. 3.—Saltbushes. Pp. 4, figs. 3.

DIVISION OF BOTANY.

Circular No. 1.—Hungarian Brome Grass (*Bromus inermis*). Pp. 4, fig. 1.
Circular No. 2.—Nut Grass (*Cyperus rotundus*). Pp. 4, fig. 1.
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Addresses on Road Improvement. By Roy Stone, Special Agent and Engineer. Pp. 15. Circular No. 14. (Reprint.) September, 1895	5,000
Wide Tires: Laws of Certain States Relating to Their Use, and Other Pertinent Information. Compiled by Roy Stone, Special Agent in Charge of Road Inquiry. Pp. 16. Bulletin No. 12. (Reprint.) September, 1895. Price 5 cents	5,000
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State Highways in Massachusetts. By George A. Perkins, Chairman Massachusetts State Highway Commission. Pp. iii, 505-512, from Yearbook for 1895. September, 1895	2,000
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Note on the Employment of Convicts in Connection with Road Building. Compiled by Roy Stone, Special Agent and Engineer. Pp. 15. Bulletin No. 16. (Reprint.) April, 1896. Price 5 cents	6,000
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Comments on Systems of Maintaining Country Roads. Pp. 7. Circular No. 20. May, 1896	10,000
Cooperative Road Construction. By Roy Stone, Special Agent and Engineer. Pp. 487-492, from Yearbook for 1895. June, 1896	1,000
State Aid to Road Building in New Jersey. By Edward Burrough, Chairman of the New Jersey State Board of Agriculture. Pp. 20. Bulletin No. 9. (Reprint.) June, 1896. Price 5 cents	4,000

DIVISION OF STATISTICS.

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Monthly Crop Report, No. 128—July, 1895. To which are appended the transportation rates as required by law, together with certain railroad and transportation statistics. Pp. 23. July, 1895. Price 5 cents	20,000
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Monthly Crop Synopsis. [A four-page summary of the condition, prospects, yields, price, distribution, and consumption of crops, and the number and value of farm animals. Issued soon after the 10th of each month for prompt and wide circulation in advance of the more extended monthly crop report, from which it is condensed.]	
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DIVISION OF VEGETABLE PHYSIOLOGY AND PATHOLOGY.

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Grape Diseases on the Pacific Coast. By Newton B. Pierce, Division of Vegetable Physiology and Pathology. Pp. 15, figs. 3. Farmers' Bulletin No. 30. August, 1895	15,000
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Peach Growing for Market. By Erwin F. Smith, Division of Vegetable Physiology and Pathology. Pp. 23, figs. 21. Farmers' Bulletin No. 33. January, 1896	20,000
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Peach Yellows and Peach Rosette. By Erwin F. Smith, Special Agent, under the direction of B. T. Galloway, Chief of the Division. Pp. 20, figs. 7. Farmers' Bulletin No. 17. (Reprint.) March, 1896	20,000
Spraying for Fruit Diseases. By B. T. Galloway, Chief of Division of Vegetable Physiology and Pathology. Pp. 12, figs. 6. Farmers' Bulletin No. 38. May, 1896	40,000
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Water as a Factor in the Growth of Plants. By B. T. Galloway and Albert F. Woods, Chief and Assistant Chief of the Division of Vegetable Physiology and Pathology. Pp. iii, 165-176, figs. 12-15, from Yearbook for 1894. September, 1895	2,000
Fertilization of the Soil as Affecting the Orange in Health and Disease. By H. J. Webber, Assistant, Division of Vegetable Physiology and Pathology. Pp. iii, 193-202, figs. 18 and 19, from Yearbook for 1894. October, 1895	2,000

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The Grain Smuts: Their Cause and Prevention. By Walter T. Swingle, Assistant, Division of Vegetable Physiology and Pathology. Pp. iii, 409-420, figs. 92-99, from Yearbook for 1894. August, 1895	2,000
Reprint, November, 1895	15,000
The Principal Diseases of Citrous Fruits in Florida. By Walter T. Swingle and Herbert J. Webber. Pp. 42, pls. 8, figs. 6. Bulletin No. 8. May, 1896. Price 10 cents	3,000
The Cause and Prevention of Pear Blight. By M. B. Waite, Assistant, Division of Vegetable Physiology and Pathology. Pp. 295-300, from Yearbook for 1895. June, 1896	200
The Two Freezes of 1894-95 in Florida and What They Teach. By Herbert J. Webber, Assistant, Division of Vegetable Physiology and Pathology. Pp. 159-174, Pl. III, figs. 16-22, from Yearbook for 1895. June, 1896	400
Frosts and Freezes as Affecting Cultivated Plants. By B. T. Galloway, Chief of the Division of Vegetable Physiology and Pathology. Pp. 143-158, figs. 8-15, from Yearbook for 1895. June, 1896	100
The Health of Plants in Greenhouses. By B. T. Galloway, Chief of Division of Vegetable Physiology and Pathology. Pp. 247-256, figs. 53-56, from Yearbook for 1895. June, 1896	200

WEATHER BUREAU.

Monthly Weather Review. [*A summary by months of weather conditions* throughout the United States, based upon reports of nearly 3,000 regular and voluntary observers. Quarto size.] Price 10 cents each.	
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Vol. XXIII, No. 4, April, 1895. Pp. 117-155, charts 6	3,200
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Climate and Crop Bulletin No. 5. April 13, 1896	5,000
Climate and Crop Bulletin No. 6. April 20, 1896	5,000
Climate and Crop Bulletin No. 7. April 27, 1896	5,000
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Climate and Crop Bulletin No. 10. May 18, 1896	5,050
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Climate and Crop Bulletin No. 13. June 8, 1896	5,000
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Storm Bulletin No. 3 of 1895. Atlantic Coast Storms of December 9 to 12 and 12 to 15, 1895. (Chart.) December, 1895	2,100
Storm Bulletin No. 1 of 1896. Coast Storm of February 5 to 7, 1896. (Chart.) February, 1896	3,100
Storm Bulletin No. 2 of 1896. Coast Storm of March 10 to 12, 1896. (Chart.) March, 1896	3,200
Storm Bulletin No. 3 of 1896. Inland and Coast Storm of March 16 to 20, 1896. (Chart.) March, 1896	3,100
Storm Bulletin No. 4 of 1896. Tornadoes of the Central Mississippi Valley. May 27, 1896. (Chart.) May, 1896	2,200
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Snow Chart. February 24, 1896	800
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Snow Chart. March 30, 1896	850
Cold Wave Bulletin No. 1 of 1896. Cold Wave of January 2 to 5, 1896. (Chart.) January, 1896	1,200
Description of Cloud Forms. (Chart with 11 illustrations.) April, 1895	500
What Meteorology is Doing for the Farmer. By Mark W. Harrington, Chief of the Weather Bureau. Pp. iii, 117-120, from Yearbook for 1894. August, 1895	500
Instructions to Observers and Code for Encyphering Reports at Cotton-region and Sugar and Rice Stations of the Weather Bureau. Pp. 39, figs. 10. August, 1895	1,000

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Weather Conditions of the Crop of 1894. By H. H. C. Dunwoody, Assistant Chief of Weather Bureau. Pp. 16, figs. 4, from Yearbook for 1894. September, 1895	12,000
Studies of Weather Types and Storms. No. 1—Types of Storms in January. By E. B. Garriott. Pp. 4, charts 25. September, 1895	300
Studies of Weather Types and Storms. Part II. Pp. 26, charts 39. June, 1896	300
Instructions for Use of Maximum and Minimum Thermometers. Revised edition. Pp. 16. figs. 8. Circular B, Instrument Room. October, 1895	2,000
Instructions for Use of the Rain Gauge. Revised edition. Circular C, Instrument Room. October, 1895	2,000
Instructions for Observers of the Weather Bureau. Pp. 82. November, 1895	1,000
Report of the Chief of the Weather Bureau, 1894. Pp. 288. December, 1895	4,000
Report of the Chief of the Weather Bureau for 1895. By Willis L. Moore. Pp. iii, 65–96, from Message and Documents, Department of Agriculture, 1895. January, 1896	8,000
Statistics of State Weather Services. By Oliver L. Fassig, Librarian. Pp. 12. February, 1896	600
The Determination of the Relative Quantities of Aqueous Vapor in the Atmosphere by Means of the Absorption Lines of the Spectrum. By L. E. Jewell, under the general supervision of Professor H. A. Rowland, of Johns Hopkins University. Pp. 12, fig. 1. Bulletin No. 16. February, 1896	1,000
Injury from Frost and Methods of Protection. By W. H. Hammon, Forecast Official. Pp. 12. April, 1896	7,000
The Work of the Weather Bureau in Connection with the Rivers of the United States. Pp. 106. diags. 3. Bulletin No. 17. May, 1896	500
Departures from Normal Temperatures and Rainfall, with Crop Yields in Nebraska. By Maj. H. H. C. Dunwoody, assigned to duty as Acting Assistant Chief. Pp. 30, charts 10. Quarto. May, 1896	1,000
Report of the Fourth Annual Meeting of the American Association of State Weather Services Cooperating with the Weather Bureau, U. S. Department of Agriculture, held at Indianapolis, Ind., October 16 and 17, 1895. Pp. 55. Bulletin No. 18. May, 1896. Price 5 cents	5,000

REPORT OF THE CHIEF OF THE DIVISION OF ACCOUNTS AND DISBURSEMENTS.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF ACCOUNTS AND DISBURSEMENTS,
Washington, D. C., July 29, 1896.

SIR: I have the honor to submit herewith, in compliance with your order of the 27th ultimo, a report on the work of this division for the year ending June 30, 1896.

Respectfully,
F. L. EVANS,
Chief.

Hon. J. STERLING MORTON,
Secretary.

WORK OF THE YEAR.

PAYMENTS AND EXPENDITURES.

Congress appropriated to the United States Department of Agriculture for the year ending June 30, 1896, exclusive of the appropriation of $720,000 for agricultural experiment stations, $2,583,750. Of this amount, $1,935,174.04 was disbursed prior to July 1, 1896. In addition to this sum there remained at that date unpaid bills aggregating about $160,000. The payment of these will make the total expenditures for the fiscal year 1896, in round numbers, $2,095,000.

The total amount paid out during the year 1896 was $2,146,744.43, which included $211,570.39 in payment of supplemental accounts for the years 1894 and 1895.

The act making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1897, provides for three items of expenditure which were not estimated for and which do not properly belong to this Department.

The first item—"Geological Survey"—appropriates $4,500 "to enable the Director of the United States Geological Survey to continue gauging the streams and determining the water supply of the United States," etc. This item pertains to the general appropriations for the Department of the Interior, and the amount carried with it will be disbursed by authority of the head of that Department.

The second item provides "for the publication of seventy-five thousand copies of Special Report on Diseases of the Horse." These reports are designed exclusively for distribution by the two Houses of Congress, and the amount appropriated ($42,500), will be disbursed by the Public Printer.

The third item is "for the publication of sixty thousand copies of the Special Report on Diseases of Cattle and Cattle Feeding," at a cost of $40,000, to be similarly distributed and paid for.

The appropriations for the year 1896 appear in the following table,

which presents, in addition to the amounts appropriated for each specific object, the sums disbursed to and the unexpended balances on July 1, 1896:

Appropriation.	Amount appropriated.	Amount disbursed.	Amount unexpended.
Salaries, Department of Agriculture	$252,840.00	$217,066.97	$35,773.03
Collecting agricultural statistics	110,000.00	67,377.71	42,622.29
Inquiries relating to public roads	10,0 0.00	9,392.18	607.82
Botanical investigations and experiments	25,000.00	18,612.47	6,387.53
Investigating the history and habits of insects	20,000.00	17,022.68	2,977.32
Investigations in ornithology and mammalogy	17,500.00	14,805.89	2,694.11
Pomological information	6,000.00	4,885.61	1,114.39
Microscopical investigations	2,000.00	....	2,000.00
Vegetable physiology and pathology	20,000.00	17,055.83	2,944.17
Laboratory, Department of Agriculture	14,900.00	10,537.88	4,362.12
Investigations in forestry	25,000.00	16,626.51	8,373.49
Illustrations and engravings, Department of Agriculture	15,000.00	11,592.77	3,407.23
Materials, document and folding room, Department of Agriculture	2,000.00	1,061.23	938.77
Experimental gardens and grounds	29,500.00	22,149.18	7,350.82
Quarantine stations for neat cattle	12,000.00	5,675.89	6,324.11
Purchase and distribution of valuable seeds	185,400.00	104,408.27	80,991.73
Experiments in the manufacture of sugar	10,000.00	1,510.94	8,489.06
Agricultural experiment stations	30,000.00	26,044.73	3,955.27
Irrigation investigations	15,000.00	4,538.55	10,461.45
Nutrition investigations	15,000.00	11,648.59	3,351.41
Investigations and experiments with grasses and forage plants	15,000.00	12,755.28	2,244.72
Investigations in relation to agricultural soils	15,000.00	12,330.27	2,669.73
Furniture, cases, and repairs, Department of Agriculture	10,000.00	8,383.05	1,616.95
Postage, Department of Agriculture	2,000.00	1,215.00	785.00
Museum, Department of Agriculture	3,000.00	2,160.00	840.00
Fiber investigations	5,000.00	3,710.36	1,289.64
Library, Department of Agriculture	6,000.00	3,412.67	2,587.33
Contingent expenses, Department of Agriculture	25,000.00	14,783.47	10,216.53
Bureau of Animal Industry	800,000.00	543,077.23	256,922.77
Total	1,698,140.00	1,183,841.21	514,298.79
WEATHER BUREAU.			
Salaries	164,290.00	142,398.01	21,891.99
Fuel, light, and repairs	8,000.00	6,185.96	1,814.04
Contingent expenses	10,000.00	4,482.35	5,517.65
General expenses	703,320.00	598,266.51	105,053.49
Total	885,610.00	751,332.83	134,277.17
Grand total	2,583,750.00	1,935,174.04	648,575.96

For the ten months ending April 30, 1896, the expenditures of the Department were $31,894.49 less than during the corresponding period of the preceding year. The increase in the expenditures during the two months subsequent to that date was due to the purchase of large quantities of seed under the joint resolution of Congress of March 14 last, directing the Secretary of Agriculture to purchase seeds for the year 1896. Eighty thousand five hundred dollars were expended for this purpose.

Financially, the appropriations of the Department are divided as shown in the following table, with the amounts appropriated to and disbursed on each for the year 1896. The "divisional" portion includes all the scientific and other divisions:

Appropriation.	Amount appropriated.	Amount disbursed.
Bureau of Animal Industry	$800,000	$543,077.23
Weather Bureau	885,610	*a* 751,332.83
Divisional	898,140	640,763.98
Total	2,583,750	1,935,174.04

a The liabilities of the Weather Bureau outstanding at the close of business June 30, 1896, amounted to $62,130.93, which will eventually make the total disbursements for that Bureau about $813,463.76. This amount is included in the $160,000 of unpaid bills previously mentioned.

The following is a comparative statement showing the appropriations for 1896, the appropriations for 1897, the estimates of the Department for 1897, the amounts provided by the House bill, and the amounts recommended by the Senate Committee on Appropriations for 1897:

Appropriation.	Amount appropriated for 1896.	Amount estimated for 1897.	Amount as per House bill, 1897.	Amount as per Senate bill, 1897.	Amount appropriated for 1897.
Salaries, Department of Agriculture	$252,840	$328,360	$316,220	$311,480	$313,860
Collecting agricultural statistics	110,000	130,000	110,000	110,000	110,000
Inquiries relating to public roads	10,000	10,000	8,000	8,000	8,000
Botanical investigations and experiments	25,000	20,000	10,000	10,000	15,000
Investigating the history and habits of insects	20,000	20,000	20,000	20,000	20,000
Investigations in ornithology and mammalogy	17,500	17,500	17,500	17,500	17,500
Pomological information	6,000	8,000	6,000	8,000	6,000
Microscopical investigations *a*	2,000				
Vegetable physiology and pathology	20,000	20,000	20,000	20,000	20,000
Laboratory, Department of Agriculture	14,900	14,900	9,900	12,400	12,400
Investigations in forestry	25,000	25,000	20,000	20,000	20,000
Illustrations and engravings (publications)	15,000	30,000	30,000	15,000	15,000
Document and folding room (publications)	2,000	5,000	5,000	5,000	5,000
Experimental gardens and grounds, Department of Agriculture	29,500	29,500	25,000	25,000	20,000
Quarantine stations for neat cattle	12,000	12,000	12,000	12,000	12,000
Purchase and distribution of valuable seeds	130,000		150,000	150,000	150,000
Farmers' Bulletins	50,000	50,000	30,000	50,000	50,000
Experiments in the manufacture of sugar *a*	10,000				
Agricultural experiment stations	30,000	30,000	30,000	30,000	30,000
Irrigation investigations *a*	15,000	6,000	15,000	6,000	
Nutrition investigations	15,000	15,000	10,000	15,000	15,000
Investigations and experiments with grasses and forage plants	15,000	15,000	10,000	18,000	10,000
Investigations in relation to agricultural soils	15,000	15,000	10,000	15,000	10,000
Furniture, cases, and repairs, Department of Agriculture	10,000	12,000	12,000	12,000	12,000
Postage, Department of Agriculture	2,000	3,000	3,000	3,000	3,000
Museum, Department of Agriculture	3,000	3,000	3,000	3,000	3,000
Fiber investigations	5,000	5,000	5,000	5,000	5,000
Horse book *b*			42,500	42,500	42,500
Library, Department of Agriculture	6,000	8,000	7,000	7,000	7,000
Cattle book *b*				40,000	40,000
Contingent expenses, Department of Agriculture	25,000	25,000	25,000	25,000	25,000
Geological Survey *b*					4,500
Bureau of Animal Industry	800,000	800,000	650,000	650,000	650,000
Total	1,698,140	1,657,260	1,612,121	1,665,880	1,564,760
WEATHER BUREAU.					
Salaries	164,290	152,200	150,540	150,540	150,540
Fuel, lights, and repairs	8,000	8,000	8,000	8,000	8,000
Contingent expenses	10,000	8,000	8,000	8,000	8,000
General expenses	703,320	717,232	717,232	717,232	717,232
Total	885,610	885,432	883,772	883,772	883,772
Grand total	2,583,750	2,542,692	2,495,893	2,549,652	2,448,532

a Appropriation discontinued.
b These amounts do not properly belong to the appropriations for the Department of Agriculture, and will not be disbursed by this office.

By this table it will be seen that the total appropriations for this Department for 1897 are $135,218 less than the total appropriations for 1896, and $94,160 less than was estimated for by the Department. The amount appropriated for statutory salaries for 1897 has been increased by $67,440 by adding the salaries of the Bureau of Animal Industry employees at Washington. Since the establishment of the Bureau, May 29, 1884, until the end of the fiscal year 1896 all salaries and other expenses of the Bureau were paid from a lump sum. It was recommended in the estimates of the Department for the year 1897 that salaries of all employees of the Bureau at Washington

should be made statutory. This was done by the act making appropriations for the year 1897.

The salaries of the employees of the Divisions of Agrostology and Soils, aggregating $13,400, were made statutory by the same act.

The appropriations for "microscopical investigations" and "experiments in the manufacture of sugar" were omitted from the Department estimates for 1897, and recommendation was made to Congress for their discontinuance. The recommendation was approved by Congress, and these appropriations have been discontinued.

In the estimates for the year 1897 certain changes were recommended in the titles of several of the scientific appropriations, for the purpose of uniformity and brevity and with a view to express more clearly the real character of the work contemplated. These changes met with the approval of the Congressional committees, and the appropriations for the year 1897 will appear under the amended designations.

UNEXPENDED BALANCES OF APPROPRIATIONS.

All unexpended balances of the appropriations for the year 1894, amounting to $626,030.72, were carried to the surplus fund and covered into the United States Treasury on June 30, 1896, by operation of law. This sum, added to the balances for the year 1893, $184,630.47, which were covered into the Treasury June 29, 1895, makes a total actually returned for the two years named of $810,663.59.

The unexpended balances of the appropriations for the year 1895 will not be available for return to the Treasury under the law until June 30, 1897. On that day it is safe to assume there will remain about $486,000 to cover into the Treasury. Of the appropriations for 1896 there will remain, after all expenses shall have been paid, about $490,000. The following recapitulation shows the large balances that have been and those that will be covered into the United States Treasury of the appropriations of this Department during the last four fiscal years. The balance for 1895 will be slightly less than was estimated a year ago, because of certain Weather Bureau telegraph bills that were omitted from the estimate at that time. The amount to be returned to the Treasury will be about $140,000 less than was covered back for 1894, but the amount appropriated for 1895 was also less by $104,476.94 than that for the preceding year. The difference in the expenditures was very largely due to greatly increased scientific work during the year.

Recapitulation.

Fiscal year.	Amount appropriated.	Amount returned to the Treasury.
1893	$2,540,060.72	$184,630.47
1894	2,603,500.00	626,030.72
1895	2,499,023.00	*a* 486,000.00
1896	2,583,750.00	*a* 490,000.00
Total	10,226,333.72	1,786,661.19

a Estimated; account not finally closed.

NUMBER OF REQUISITIONS AND AUTHORIZATIONS ISSUED, CHECKS DRAWN, ETC.

During the year 1896, 13,085 accounts were received, audited, and paid, amounting to $2,146,744.43. In settlement of these accounts 21,117 checks were drawn in and transmitted from this office, of which number 19,049 were drawn on New York.

One hundred and twelve requisitions were drawn on the United States Treasury, for amounts aggregating $2,163,468.23, in settlement of all claims against this Department for the year ending June 30, 1896.

Four thousand three hundred and seventy-two requisitions for supplies were issued.

Nine hundred and thirty-five letters of authority were issued for traveling and other expenses to the employees of the Department.

Twenty-five thousand one hundred and thirteen letters were written and received in the usual course of business.

One thousand and twenty-three requests for passenger transportation were issued to officers and agents of the Department traveling on official business.

Seven hundred and ninety-five requests were drawn on the Quartermaster-General for the transportation of Government property. All freight of the Department is now transported through this agency, which offers special facilities and insures expedition, accuracy, and economy, and precludes any possibility of error in case of transportation over bond-aided lines.

MONTHLY CHECK STATEMENTS.

The statements prepared in this office, monthly, of checks drawn in and issued herefrom have been carefully compared with and verified by the monthly statements made by the Treasury at Washington and the subtreasury at New York for each month of the year.

Four checks were lost in the mails and otherwise during the year.

PROCEEDS OF GOVERNMENT PROPERTY.

The following is a complete statement of all moneys received in this office during the year from United States seacoast telegraph line receipts and the sale of Government property, card index, and certain publications, amounting to $13,515.61. This money was deposited in the United States Treasury, as required by law. The amount included $6,504 received from the sale of sugar machinery condemned and ordered sold in the fiscal year 1895, the proceeds from the sale of which, however, were not received until the year 1896:

Condemned property	$8,546.66
Card index	143.75
Publications	119.47
United States seacoast telegraph line receipts	4,705.73
Total	13,515.61

SUGAR EXPERIMENTS.

The law requires that a "full and accurate account of the proceeds of sales of all products in the experiments of sugar culture" shall be made to Congress each year. No money was received from this source during the year, experiments in this connection having been wholly discontinued by the Department.

QUARTERLY SETTLEMENT OF ACCOUNTS.

The quarterly statement of the accounts of this Department to the accounting officers of the United States Treasury has invariably been made in advance of the time required by law, thus insuring prompt consideration in their settlement. All accounts to the end of the third quarter have been settled and certified by the Auditor. The fourth quarter's accounts are now in course of settlement by that officer.

ESTIMATES OF APPROPRIATIONS.

The estimates of appropriations for 1896, to be submitted to Congress, were carefully prepared in this office, based upon approved recommendations submitted by the chiefs of bureaus and divisions of the Department, in accordance with the present plan of publication. After being approved by the honorable Secretary of Agriculture they were transmitted to the Treasury, in accordance with requirements of law, in advance of the prescribed date. A minute and accurate explanation of all variations and new items, giving the reasons therefor, was furnished to the Committee on Agriculture.

STATEMENT TO CONGRESS OF ANNUAL EXPENDITURES.

The detailed report as required by law of the expenditures of all appropriations of the Department for the year 1895, including the names of persons that were employed and the sums paid to each, was prepared in this office and transmitted to Congress last fall in advance of the date required by law. This report has since been published by order of Congress.

BUILDINGS RENTED BY THE DEPARTMENT IN THE DISTRICT OF COLUMBIA.

The following statement shows the location, annual rental, and use of the various buildings rented by this Department in the District of Columbia during the year 1896, viz:

No. 1362 B street SW., Bureau of Animal Industry laboratory	$1,200
No. 1364 B street SW., chemical laboratory	900
No. 212 Thirteenth street SW., offices and laboratories	660
No. 214 Thirteenth street SW., offices and laboratories	660
Bennings, D. C., Bureau of Animal Industry Veterinary Experiment station	600
Total	4,020

STATIONS UNDER LEASE BY THE DEPARTMENT OUTSIDE OF THE DISTRICT OF COLUMBIA.

Below is a list of the Bureau of Animal Industry and Weather Bureau stations under lease for 1896, with location and annual and monthly rental:

BUREAU OF ANIMAL INDUSTRY.

Baltimore, Md.	per annum	$1,200.00
Do	do	600.00
Garfield, N. J	do	125.00
Littleton, Mass	do	250.00
New York, N. Y	do	500.00
Do	per month	14.00
Buffalo, N. Y	do	25.00
Boston, Mass	do	40.00
Chicago, Ill	do	15.00
Do	do	200.00
East St. Louis, Ill	do	29.25
St. Joseph, Mo	do	12.50
Kansas City, Mo	do	15.00
South Omaha, Nebr	do	50.00
Kansas City, Kans	do	45.00

WEATHER BUREAU.

The following is a list of Weather Bureau stations under lease during the fiscal year ending June 30, 1896, with location and amount of annual rental, including various items, such as heat, light, janitor, ice, brooms, matches, etc:

List of Weather Bureau stations.

Station.	Location.	Amount of rental.
Abilene, Tex	South First street	$399.20
Alpena, Mich	Corner Fletcher and Dock streets	211.36
Amarillo, Tex	Corner Polk and Fifth streets	200.00
Astoria, Oreg	Pythian Hall, Commercial street	288.00
Atlantic City, N. J	Real Estate and Law building	137.00
Baker City, Oreg	Baer & Bloch building, Main street	350.00
Baltimore, Md	Equitable building, Calvert and Fayette streets	525.00
Block Island, R. I	Main street	259.97
Buffalo, N. Y	Guaranty building, corner Pearl and Church streets	504.76
Charleston, S. C	No. 1 Broad street	459.00
Cheyenne, Wyo	216-218 West Sixteenth street	367.61
Chicago, Ill	Auditorium building	800.00
Cleveland, Ohio	Western Reserve building	700.00
Concordia, Kans	Post-office building	264.00
Corpus Christi, Tex	Corner Chapparal and Star streets	319.20
Davenport, Iowa	Masonic Temple	300.00
Detroit, Mich	Union Trust building	550.00
Dodge City, Kans	Beeson block, Front street	389.65
Dubuque, Iowa	Ruete's building, Main street	360.00
Eureka, Cal	Second and G streets	334.65
Fort Smith, Ark	Hotel Main, 606-608 Garrison avenue	240.00
Fresno, Cal	Farmers' Bank building	400.00
Galveston, Tex	Cotton Exchange building	302.40
Grand Haven, Mich	Cutler House, Third and Washington streets	237.29
Green Bay, Wis	Parmentier block	300.00
Hatteras, N. C	Styron's House	154.50
Havre, Mont	First street, between Second and Third avenues	360.00
Helena, Mont	Power block, corner Main street and Sixth avenue	420.00
Idaho Falls, Idaho	Graehl Hotel, corner Front and Shoup streets	360.00
Indianapolis, Ind	Ingalls block	363.82
Jacksonville, Fla	Astor building, 138 West Bay street	312.18
Kansas City, Mo	Rialto building, Grand avenue and Ninth street	660.00
Key West, Fla	Waite building, Duval and Wall streets	407.30
Lander, Wyo	Bunch and Iiams block	360.00
Little Rock, Ark	Miller building, 202 East Markham street	418.20
Los Angeles, Cal	Wilson building, 102½ South Spring street	419.30
Lynchburg, Va	Law building, 805-809 Main street	270.00
Memphis, Tenn	Continental Bank building	600.00
Meridian, Miss	Walker & Hall building	280.00

List of Weather Bureau stations—Continued.

Station.	Location.	Amount of rental.
Miles City, Mont	Bryan building, Seventh and Main streets	$120.00
Moorhead, Minn	First National Bank	265.25
Nantucket, Mass	Pacific Club House	306.09
Narragansett Pier, R. I	Gould Cottage	150.96
New Haven, Conn	Insurance building, 890 Chapel street	400.00
Norfolk, Va	Dodson building, 53-55 Main street	525.00
North Platte, Nebr	Odd Fellows' Hall	339.50
Oklahoma, Okla	Opera House	410.00
Omaha, Nebr	McCague building	600.00
Palestine, Tex	Colley-Wright building	314.00
Pierre, S. Dak	National Bank of Commerce	400.00
Port Angeles, Wash	Opera House block	236.00
Portland, Me	First National Bank	504.00
Pueblo, Colo	Swift block, Sixth and Main streets	300.00
Pysht, Wash	Merrill, Bliss & Co.'s building	120.00
Rapid City, S. Dak	Sweeney block, Main and Seventh streets	300.00
Red Bluff, Cal	Cone & Kimball building	396.25
Roseburg, Oreg	Marks building, 228½ Jackson street	306.00
St. Paul, Minn	Chamber of Commerce, 112 East Sixth street	300.85
Salt Lake City, Utah	Board of Trade building	400.00
San Antonio, Tex	Maverick Bank building	192.00
San Diego, Cal	Cole block, corner Fifth and G streets	312.00
San Francisco, Cal	Mills building	1,200.00
San Luis Obispo, Cal	Rackliffe building	300.00
Sault Ste. Marie, Mich	News building, 33 Ashmun street	336.00
Savannah, Ga	Board of Trade building	200.00
Seattle, Wash	New York building	360.00
Spokane, Wash	Jamieson building	256.80
Tampa, Fla	Knight building, 315½ Franklin street	317.75
Topeka, Kans	Columbian building	350.00
Vineyard Haven, Mass	Eagleston block	260.00
Walla Walla, Wash	Paine Bros.' building	295.80
Wichita, Kans	The Sedgwick, First and Market streets	363.00
Williston, N. Dak	John Bruegger & Bros.' building	150.00
Winnemucca, Nev	Court-house, Bridge street	268.00
Yankton, S. Dak	Union block, Third and Walnut streets	180.00

WEATHER BUREAU TELEGRAPH SERVICE.

The amounts paid for telegraph service by the Weather Bureau from July 1, 1891, the date the Bureau was transferred to this Department, to June 30, 1896, is shown by fiscal years in the following table:

1891	$112,668.54
1892	148,913.44
1893	167,335.50
1894	178,418.36
1895	153,941.58
1896	153,865.84
Total	915,143.26

ANNUAL SUPPLIES.

The advertisement soliciting bids for annual supplies for the fiscal year 1896 was issued from this office on April 10, 1895, and bids were opened May 9 following. These bids were fully considered and carefully tabulated by the board of award appointed by the honorable Secretary for the purpose, by whom recommendations were made in accordance with the returns. The findings of the board were submitted to and approved by the honorable Secretary of Agriculture, and referred to the United States Treasury for final action, in compliance with the provisions contained in the act approved January 27, 1894, amending section 3709, Revised Statutes. The recommendations of this Department were fully approved by the Treasury board. Bids were then awarded and contracts entered into on very favorable terms to the Government, each contract being secured by a bond in a sum determined by the amount of the award. The contract system, as

contemplated by law, is now working perfectly in this Department, and resulted during the last year in a large saving to the Government. Contracts for annual supplies for the year beginning July 1, 1896, have been entered into. Prices, as a rule, range lower than for the preceding year, except in the cases of coal and ice. The prices of coal range 10 per cent higher than for 1896, and those for ice about 50 per cent higher. The advance in price of coal is due to outside combination, but in the case of ice the combine is purely local.

The present plan of referring bids for annual supplies to the United States Treasury for final revision, as required by the act of January 27, 1894, after they have been passed upon by the local board of each Department and approved by the head thereof, greatly delays the awarding of bids and the making of contracts, and is apparently of no advantage whatever to the Government.

The schedules for annual supplies have been very carefully revised, and to some of them have been added many new items. They now seem complete as to instructions, items, and general and convenient arrangement of details. This, together with a very thorough system of advertising, has resulted in securing a largely increased number of bids, greater competition, and better prices to the Government.

LEASES, CONTRACTS, ETC.

In conformity with the plan adopted a year ago, all leases, contracts, agreements, and authorizations have been confined to the fiscal year in which they were in effect, and dated, when practicable, from the first of the year. This plan secures uniformity and convenience, and materially reduces the liability to error and misapprehension. All leases, when a continuance is desired, will be renewed on July 1 of each year.

RULINGS OF THE COMPTROLLER AND THE DEPARTMENT REGULATIONS.

In view of recent rulings and requirements of the Comptroller of the Treasury, effecting decided changes in the system of payments by disbursing officers, it will be necessary in the near future to amend the regulations governing financial transactions with this Department. The present regulations, which went into effect July 1, 1894, are based upon law as it relates to financial transactions with the Government, as practically applied in ordinary business and upon the experience of accounting officers of the Government. While more than two years' trial has shown the regulations to be complete in all essential details, they are still subject to the action of the Comptroller in his construction of the law.

The work of the Division of Accounts and Disbursements has been kept fully up during the year. All accounts received in the office have been promptly and carefully considered and paid when found correct and properly charged. The requirement in the regulations that all persons having claims against the Department shall present them monthly has had a decided tendency to facilitate the settlement of accounts. Formerly many persons doing business with the Department were very indifferent about presenting their accounts, frequently allowing them to remain open for six months or longer. This custom has led to annoying controversies, has required additional bookkeeping, closer scrutiny, and a system of checking up more elaborate than at present. The work is arranged upon a plan to secure dispatch and

accuracy, and every safeguard is provided for the protection of the Government.

The present clerical force is sufficient for the prompt dispatch of all business coming to the office. The clerks have rendered efficient service during the year, and have been prompt and regular in attendance and attentive to their respective duties and to the rules of the Department.

The accounts for the fiscal years 1893 and 1894 having been finally closed, the following statement of the appropriations, disbursements, and unexpended balances for these years is herewith appended, being a continuation of the detailed statement submitted with the report of this office for 1895:

Appropriations, disbursements, and unexpended balances for 1893 and 1894.

Purpose.	Date of appropriation act.	Reference to Statutes at Large.			Fiscal year.	Amount appropriated.	Amount disbursed.	Amount unexpended.
		Vol.	Page.	Sec.				
	1892.							
Salaries	July 5	27	74	1	1893	$256,800.00	$253,896.30	$2,903.70
Collecting agricultural statistics	do	27	76	1	1893	110,000.00	95,649.21	14,350.79
Botanical investigations and experiments	do	27	76	1	1893	27,500.00	27,451.55	48.45
Investigating the history and habits of insects	do	27	77	1	1893	17,800.00	17,290.80	509.20
Investigations in ornithology and mammalogy	do	27	77	1	1893	15,000.00	14,947.77	52.23
Pomological information	do	27	77	1	1893	5,000.00	4,745.94	254.06
Microscopical investigations	do	27	77	1	1893	2,000.00	1,982.98	17.02
Vegetable pathology	do	27	77	1	1893	20,000.00	19,977.38	22.62
Laboratory	do	27	77	1	1893	19,400.00	18,002.59	1,397.41
Fiber investigations	do	27	78	1	1893	5,000.00	4,997.07	2.93
Forestry investigations	do	27	78	1	1893	12,000.00	11,933.39	66.61
Illustrations and engravings	do	27	78	1	1893	2,000.00	1,906.73	93.27
Purchase and distribution of seeds	do	27	78	1	1893	135,400.00	134,908.27	491.73
Document and folding room	do	27	78	1	1893	2,000.00	1,623.55	376.45
Experimental garden and grounds	do	27	78	1	1893	28,500.00	28,115.09	384.91
Museum	do	27	79	1	1893	4,000.00	3,973.67	26.33
Furniture, cases, and repairs	do	27	79	1	1893	10,000.00	8,931.97	1,068.03
Library	do	27	79	1	1893	3,000.00	2,535.29	464 71
Postage	do	27	79	1	1893	5,000.00	3,705.00	1,295.00
Contingent expenses	do	27	79	1	1893	25,000.00	22,218.19	2,781.81
Experiment stations	do	27	80	1	1893	20,000.00	18,987.65	1,012 35
Experiments in the manufacture of sugar	do	27	80	1	1893	20,000.00	19,984.86	15.14
Irrigation investigations	do	27	76	1	1893	6,000.00	4,930.67	1,069.33
Quarantine stations	do	27	80	1	1893	15,000.00	12,633.23	2,366.77
Experiments in the production of rainfall	do	27	76	1	1893	10,000.00	4,979.59	5,020.41
Bureau of Animal Industry	do	27	79	1	1893	850,000.00	724,696.74	125,303.26
Weather Bureau	do	27	81	1	1893	913,660.72	890,424.77	23,235.95
Total, 1893						2,540,060.72	2,355,430.25	184,630.47
	1893.							
Salaries	Mar. 3	27	734	1	1894	256,800.00	233,679.75	23,120.25
Collecting agricultural statistics	do	27	{736} {737}	1	1894	110,000.00	91,080.20	18,919.80
Botanical investigations and experiments	do	27	737	1	1894	30,000.00	24,401.40	5,598.60
Investigating the history and habits of insects	do	27	737	1	1894	20,300.00	16,203.96	4,096.04
Investigations in ornithology and mammalogy	do	27	737	1	1894	17,500.00	17,450 00	50.00
Pomological information	do	27	738	1	1894	5 000 00	4,248.99	751.01
Microscopical investigations	do	27	738	1	1894	2,000.00	1,117 55	882.45
Vegetable pathology	do	27	738	1	1894	20,000.00	17,576.95	2,423.05
Laboratory	do	27	738	1	1894	21 900 00	10,426.79	11 473.21
Fiber investigations	do	27	738	1	1894	5,000.00	2,500 47	2,499.53
Forestry investigations	do	27	738	1	1894	20,000 00	19,995.96	4.04
Illustrations and engravings	do	27	738	1	1894	2,000.00	664.79	1,335.21

Appropriations, disbursements, and unexpended balances, etc.—Continued.

Purpose.	Date of appropriation act.	Reference to Statutes at Large.			Fiscal year.	Amount appropriated.	Amount disbursed.	Amount unexpended.
		Vol.	Page.	Sec.				
Purchase and distribution of seeds	1893. Mar. 3	27	738	1	1894	$135,400.00	$119,719.76	$15,680.24
Document and folding room	...do...	27	739	1	1894	2,000.00	1,662.81	337.19
Experimental garden and grounds	...do...	27	739	1	1894	31,500.00	26,616.86	4,883.14
Museum	...do...	27	739	1	1894	4,000.00	2,787.22	1,212.78
Furniture, cases, and repairs	...do...	27	739	1	1894	10,000.00	8,628.76	1,371.24
Library	...do...	27	739	1	1894	3,000.00	2,900.07	99.93
Postage	...do...	27	740	1	1894	5,000.00	1,375.00	3,625.00
Contingent expenses	...do...	27	740	1	1894	25,000.00	20,493.04	4,506.96
Experiment stations	...do...	27	740	1	1894	*a* 25,223.50	22,381.85	2,841.65
Inquiries relating to public roads	...do...	27	737	1	1894	10,000.00	2,997.39	7,002.61
Experiments in the manufacture of sugar	...do...	27	741	1	1894	*b* 20,107.33	9,451.80	10,655.53
Irrigation investigations	...do...	27	741	1	1894	6,000.00	5,475.92	524.08
Quarantine stations	...do...	27	740	1	1894	15,000.00	6,263.92	8,736.08
Bureau of Animal Industry	...do...	27	740	1	1894	850,000.00	496,111.34	353,888.66
Weather Bureau	...do...	27	741	1	1894	*c* 951,124.75	811,256.73	139,868.02
Total, 1894						2,603,855.58	1,977,469.28	626,386.30

a Including $223.50 from the sale of card index.
b Including $107.33 from the sale of sugar and molasses.
c Including $24.75 from the sale of maps.

The following table shows, by years, the amounts appropriated, together with the disbursements and unexpended balances for the United States Department of Agriculture from its inception to the year 1896. The disbursements and unexpended balances for the years 1895 and 1896 are estimated, the accounts for these years being still open. The appropriations for the Department for the year 1885 were largely increased in the aggregate by the creation and addition of the Bureau of Animal Industry, and still further augmented in 1888 by an increase in the Bureau appropriation to $500,000, while the transfer of the Weather Bureau to the Department, July 1, 1891, nearly doubled the appropriations.

Appropriations, disbursements, and unexpended balances, 1839 to 1896, inclusive.

Fiscal year.	Amount appropriated.	Amount disbursed.	Amount unexpended.
1839	$1,000.00	$1,000.00	
1840			
1841			
1842	1,000.00	1,000.00	
1843			
1844	2,000.00	2,000.00	
1845	2,000.00	2,000.00	
1846	3,000.00	3,000.00	
1847	3,000.00	3,000.00	
1848	4,500.00	4,500.00	
1849	3,500.00	3,500.00	
1850	5,500.00	5,500.00	
1851	5,500.00	5,500.00	
1852	5,000.00	5,000.00	
1853	5,000.00	5,000.00	
1854	10,000.00	10,000.00	
1855	*a* 50,000.00	50,000.00	
1856	30,000.00	30,000.00	
1857	75,000.00	75,000.00	
1858	63,500.00	63,157.25	$342.75
1859	60,000.00	60,000.00	
1860	40,000.00	40,000.00	

a Including deficiency appropriation.

Appropriations, disbursements, and unexpended balances, etc.—Continued.

Purpose.	Date of appropriation act.	Reference to Statutes at Large.			Fiscal year.	Amount appropriated.	Amount disbursed.	Amount unexpended.
		Vol.	Page.	Sec.				
Purchase and distribution of seeds	1893. Mar. 3	27	738	1	1894	$135,400.00	$119,719.76	$15,680.24
Document and folding room	do	27	739	1	1894	2,000.00	1,662.81	337.19
Experimental garden and grounds	do	27	739	1	1894	31,500.00	26,616.86	4,883.14
Museum	do	27	739	1	1894	4,000.00	2,787.22	1,212.78
Furniture, cases, and repairs	do	27	739	1	1894	10,000.00	8,628.76	1,371.24
Library	do	27	739	1	1894	3,000.00	2,900.07	99.93
Postage	do	27	740	1	1894	5,000.00	1,375.00	3,625.00
Contingent expenses	do	27	740	1	1894	25,000.00	20,493.04	4,506.96
Experiment stations	do	27	740	1	1894	a 25,223.50	22,381.85	2,841.65
Inquiries relating to public roads	do	27	737	1	1894	10,000.00	2,997.39	7,002.61
Experiments in the manufacture of sugar	do	27	741	1	1894	b 20,107.33	9,451.80	10,655.53
Irrigation investigations	do	27	741	1	1894	6,000.00	5,475.92	524.08
Quarantine stations	do	27	740	1	1894	15,000.00	6,263.92	8,736.08
Bureau of Animal Industry	do	27	740	1	1894	850,000.00	496,111.34	353,888.66
Weather Bureau	do	27	741	1	1894	c 951,124.75	811,256.73	139,868.02
Total, 1894						2,603,855.58	1,977,469.28	626,386.30

a Including $223.50 from the sale of card index.
b Including $107.33 from the sale of sugar and molasses.
c Including $24.75 from the sale of maps.

The following table shows, by years, the amounts appropriated, together with the disbursements and unexpended balances for the United States Department of Agriculture from its inception to the year 1896. The disbursements and unexpended balances for the years 1895 and 1896 are estimated, the accounts for these years being still open. The appropriations for the Department for the year 1885 were largely increased in the aggregate by the creation and addition of the Bureau of Animal Industry, and still further augmented in 1888 by an increase in the Bureau appropriation to $500,000, while the transfer of the Weather Bureau to the Department, July 1, 1891, nearly doubled the appropriations.

Appropriations, disbursements, and unexpended balances, 1839 to 1896, inclusive.

Fiscal year.	Amount appropriated.	Amount disbursed.	Amount unexpended.
1839	$1,000.00	$1,000.00	
1840			
1841			
1842	1,000.00	1,000.00	
1843			
1844	2,000.00	2,000.00	
1845	2,000.00	2,000.00	
1846	3,000.00	3,000.00	
1847	3,000.00	3,000.00	
1848	4,500.00	4,500.00	
1849	3,500.00	3,500.00	
1850	5,500.00	5,500.00	
1851	5,500.00	5,500.00	
1852	5,000.00	5,000.00	
1853	5,000.00	5,000.00	
1854	10,000.00	10,000.00	
1855	a 50,000.00	50,000.00	
1856	30,000.00	30,000.00	
1857	75,000.00	75,000.00	
1858	63,500.00	63,157.25	$342.75
1859	60,000.00	60,000.00	
1860	40,000.00	40,000.00	

a Including deficiency appropriation.

Appropriations, disbursements, and unexpended balances, etc.—Continued.

Fiscal year.	Amount appropriated.	Amount disbursed.	Amount unexpended.
1861	$60,000.00	$60,000.00	
1862	64,000.00	63,704.21	$295.79
1863	80,000.00	80,000.00	
1864	199,770.00	189,270.00	10,500.00
1865	*a* 112,304.05	112,196.55	107.50
1866	167,787.82	167,787.82	
1867	199,100.00	199,100.00	
1868	279,020.00	277,094.34	1,925.66
1869	172,593.00	172,593.00	
1870	156,440.00	151,596.93	4,843.07
1871	*a* 188,180.00	186,876.81	1,303.19
1872	197,070.00	195,977.25	1,092.75
1873	202,440.00	201,321.22	1,118.78
1874	257,690.00	233,765.78	23,924.22
1875	337,380.00	321,079.83	16,300.17
1876	249,120.00	198,843.64	50,276.36
1877	194,686.96	188,206.19	6,480.77
1878	198,640.00	197,634.94	1,005.06
1879	206,400.00	206,360.00	40.00
1880	199,500.00	198,361.72	1,138.28
1881	275,460.31	267,608.84	*b* 7,851.47
1882	363,011.05	354,482.39	*c* 8,528.66
1883	456,396.11	438,941.72	*d* 17,454.39
1884	*a* 416,641.13	413,618.09	3,023.04
1885	*a* 655,930.25	558,934.89	*e* 96,995.36
1886	*a* 677,973.22	519,196.11	158,777.11
1887	*a* 657,641.81	628,287.14	29,354.67
1888 *f*	1,027,219.06	1,011,282.62	15,936.44
1889	*a* 1,134,480.60	1,033,590.22	*g* 100,890.38
1890	*a* 1,170,139.11	971,823.62	*h* 198,315.49
1891	*a* 1,372,049.21	1,266,277.36	105,771.85
1892	*a* 2,303,655.75	2,253,262.29	50,393.46
1893	2,540,060.72	2,355,430.25	184,630.47
1894	*i* 2,603,855.58	1,977,469.28	626,386.30
1895	*j* 2,506,915.00	2,020,725.00	486,190.00
1896	2,583,750.00	2,093,750.00	490,000.00
Total	24,467,456.26	22,135,607.30	2,331,848.96

a Including deficiency appropriation.

b Includes $1,646.45 of the appropriation for reclamation of arid lands carried to the fiscal year 1882.

c Includes $85.26 of the appropriation for reclamation of arid lands, and $3,530.85 of the appropriation for experiments in the manufacture of sugar, carried to the fiscal year 1883.

d Includes $7,656.13 of the appropriation for reclamation of arid lands, carried to the fiscal year 1884.

e Includes $93,192.27 of the appropriation for Bureau of Animal Industry, and $2,970.82 of the appropriation for quarantine stations, carried to the fiscal year 1886.

f For the fiscal year 1888 including the sum of $8,000 appropriated for deficiencies in the appropriation for experiments in the manufacture of sugar for the fiscal years 1887 and 1888, of which $7,927.50 was disbursed and $72.50 remained unexpended.

g Includes $12,923.25 of the appropriation for botanical investigations, and $58,364.76 of the appropriation for experiments in the manufacture of sugar, carried to the fiscal year 1890.

h Includes $188,974.69 of the appropriation for Bureau of Animal Industry, carried to the fiscal year 1891.

i Includes $355.58 from sale of card index, maps, and sugar.

j Includes $7,891.94 reappropriated from statutory salaries of previous year; bill making appropriations for 1895 did not become a law until August 8, 1894.

REPORT OF THE CHIEF OF THE DIVISION OF FORESTRY.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF FORESTRY,
Washington, D. C., September 10, 1896.

SIR: I have the honor to submit herewith my report on the work of the Division of Forestry during the fiscal year ending June 30, 1896, and my recommendations for future work.

Respectfully,

B. E. FERNOW,
Chief.

Hon. J. STERLING MORTON,
Secretary.

WORK OF THE YEAR.

APPROPRIATIONS AND EXPENDITURES.

The appropriations made for the fiscal year ending June 30, 1896, for the work of the Division of Forestry amounted to $8,520 for the statutory roll of employees, and $25,000 for the general fund "to enable the Secretary of Agriculture to experiment and continue an investigation and report upon the subject of forestry and timbers, for traveling and other necessary expenses in the investigation, and for the collection and distribution of valuable economic forest-tree seeds and plants."

Of this last amount a balance of $6,613.31 remains unexpended. The distribution of expenditures for various lines of work was as follows:

Timber investigations	$11,824.11
Biological and botanical studies	3,458.41
Tree-planting experiments	2,144.29
Special reports and contingencies	959.88
Total	18,386.69

PERSONNEL OF DIVISIONAL FORCE.

Sundry changes have taken place in the personnel of the force, which now consists, in addition to the chief and the assistant chief, of 1 dendrologist, 1 timber expert, 1 field agent, and 1 computer, comprising what may be regarded as the scientific staff, and of 5 clerks and 1 messenger. Notwithstanding the fact that each branch of the force includes 6 persons, and in spite of the vast difference in attainments necessitated by the duties of each, the salary roll of the scientific force, which includes the chief and his assistant, aggregates only $9,800, by comparison with $5,700 for the clerical force and messenger, which has since July 1 been increased to $6,100 by promotions.

In addition to the regular force of employees the temporary employment of experts has been necessary from time to time. To do the work in hand satisfactorily at least two more assistants on the scientific staff are desirable, namely, one with a knowledge of civil engineering, capable of utilizing to their full value the data accumulated in the timber-test work, as well as of superintending further work on the same line, and one expert in vegetable anatomy, to assist in working out the physical properties of our timbers and to carry on the many experiments on their practical technology which constantly suggest themselves as the work progresses. The first of these has now been provided for.

CORRESPONDENCE.

The correspondence of the division continues to increase as interest in forest planting and forest management spreads, and especially as the timber-test work of the division is appreciated. The preparation of answers to requests from manufacturers using wood and wood consumers generally, for information regarding the adaptability, relative value, identification, distribution, etc., of wood materials, has occupied the time of a large part of the office force, the correspondence constituting a considerable portion of the 2,500 pages of letter-book copy made during the year.

TIMBER PHYSICS.

The record of the timber-test work hitherto performed stands as follows:

Trees collected, 356, of 32 species, mostly of Southern growth. The distribution of tests by species is as follows:

Southern pines, 5 species		20,341
Northern pines, 2 species		1,097
Bald cypress		4,126
White cedar		243
Oregon fir, 10 pieces		276
Total conifers		26,083
Gum, red	857	
Oaks, white, 4 species	4,052	
Oaks, black, 5 species	4,301	
Hickory, 8 species	3,011	
Ash, 2 species	714	
Elm, 2 species	409	
		13,344
Grand total		39,427

The data accumulated from these tests have been computed and compiled, or nearly so, and will presently become available for critical study and for comparison with the results of physical examination of the test material, and finally to be published as preliminary results. Before, however, we can claim to have an exhaustive knowledge of the technological value and mechanical characteristics of the species treated much work remains to be done.

Additional lines of investigation, namely, into the relative inflammability and combustibility of our building timbers, the relative value of fireproof materials, the effect of different degrees of heat in seasoning on the quality of the material, and many others, had to be abandoned for lack of proper working facilities.

PUBLICATIONS.

As a result of these timber investigations two bulletins and one exhaustive 12-page (4to) circular have been published, namely, Bulletin No. 10, Timber—An Elementary Discussion of the Characteristics and Properties of Wood, by Filibert Roth, a publication which is in this form unique in the English language, and has been honored by a translation into French, presently to be published; Bulletin No. 12, Economic Designing of Timber Trestle Bridges, by A. L. Johnson, C. E., in which the writer, who had been actively connected with the test work, seeks to apply the new knowledge gained of the strength of Longleaf Pine to practice in bridge building, and points out economies that may result in the saving of several million dollars annually (this is already out of print); Circular No. 12, Mechanical Properties of the Southern Pines, which brings in most compact form the results of the investigations on the strength and physical properties and behavior under varying conditions of the wood of these most important timber trees.

The value of this information may be judged from the fact that a number of technical journals have reprinted it in full, and the importance and practical value of the entire line of inquiry is attested by editorial comments in leading journals and from the many expressions of approval in resolutions passed by engineering societies and railway clubs urging its continuance, notably American Society of Civil Engineers, Master Car Builders' Association, Institute of Architects, New York Railroad Club, Western Railroad Club of Chicago, Technical Society of the Pacific Coast, San Francisco, Engineers' Club of Philadelphia, and many others.

In addition to the publications emanating from the timber-physics work, Bulletin No. 11, issued in connection with the Atlanta Exposition, discusses the value and requirements of some economically important exotics capable of more extended introduction in Southern forestry, notably the Cork Oak, Bamboos, Eucalyptus, and Acacias. Circular No. 11, Facts and Figures Regarding our Forest Resources, attempts to briefly exhibit the extent and value of our forest resources and their consumption. Circulars Nos. 13 and 14 contain information regarding the latest legislation to prevent forest fires, and discusses the practicability of coping with this most detrimental enemy to rational forestry, showing that millions of dollars of valuable property could be saved annually by a few hundred thousand dollars spent in a systematic way.

A chapter on "Forest-planting on Western plains" was furnished for the Yearbook by the assistant chief, and a short article on the "Relation of farms to forests" by the chief of the division.

The manuscripts of the exhaustive series of monographs on the Southern lumber pines, prepared by Dr. Charles Mohr, and of a revision of nomenclature of our arborescent flora, by George B. Sudworth, were placed in the hands of the printer and will presently be issued as Bulletins Nos. 13 and 14, respectively. The delay was in both cases in part intentional, for the purpose of increasing the value of the publication by additional information. Further biological studies on Southern timber trees by Dr. Mohr have been submitted in manuscript.

In addition to the above-mentioned publications designed to increase the interest in and add to the knowledge of forestry, the writer and his chief assistant have delivered addresses at various places and attended meetings of forestry associations.

TREE MEASUREMENTS.

As pointed out in former reports, the question of profits in forest management must to a large extent be based on a knowledge of the rate of growth and yield of our timber trees. Hence, as opportunity occurred, measurements of the rate of growth of some of our more important species have been made, mostly by Mr. Austin Cary, employed from time to time for this purpose. The data for the White Pine, comprising 550 full tree analyses and 54 acre-yield measurements, have been fully tabulated and computed, so as to enable the publication presently of an exhaustive statement of the rate of growth of this species.

EXPERIMENTAL FOREST PLANTINGS.

By an arrangement with the authorities of the State experiment stations at Manhattan, Kans.; Lincoln, Nebr.; Brookings, S. Dak., and Fort Collins, Colo., the Department has obtained control of lands upon which to carry on forest planting experiments. As a result there have been planted this spring, at the four places, 27 acres with 100,000 plants of 20 kinds, and in addition a nursery for the supply of plant material for future needs has been established in Lincoln, and some 25 additional species have been planted to test their adaptation to the climate at the several stations.

The object of these experiments is twofold, namely, to demonstrate the proper methods of forest planting, which differ from those of orchard, park, and nursery practice, including the determination of desirable mixtures of species, and also to test the adaptability of different species for different conditions.

This work has been carried on under the immediate charge of Mr. C. A. Keffer, assistant chief, who has had experience in this direction when professor of horticulture and forestry at Brookings, S. Dak. The Department provides the plans, plant material, and labor, and the professors of horticulture at the institutions mentioned cooperate free of charge in attending to the setting out and cultivating of plants and to the carrying out of the plans proposed by the division.

Although $5,000 had been set aside for this work, it was found that less than half that amount ($2,144.29) would be sufficient to make a beginning, especially as it seemed desirable to "underplant" some of the existing groves at the stations rather than extend them, and thus demonstrate the value of an undergrowth.

ATLANTA EXPOSITION.

A considerable amount of time and thought of the chief and some of his assistants was, by direction of the Secretary of Agriculture, devoted to the planning, collecting, and installing of exhibits for the Cotton States and International Exposition at Atlanta, Ga. In addition to the representation of the division in the Government exhibits, the writer had been detailed to act as chief of the forestry department for the exposition company. In this way it was possible to attain a systematic and comprehensive arrangement of materials, and a very creditable, practical, as well as ornamental, exhibit of Southern forest resources, descriptive and statistical, showing their extent, condition, variety, and value in the arts, was the result, which received the highest award by the grand jury.

FUTURE WORK.

As long as this division is not charged with any practical forest administration its work must be confined to the gathering and diffusion of such information as may promote interest in the subject and to original investigations the results of which will lead to a wiser use of our existing forest resources or will be helpful in carrying on forest management when the time has come for it. A knowledge of the life history of our timber species, the conditions under which they develop best, the rapidity with which they grow into useful material, are subjects for such investigations, while a more intimate knowledge of the characteristics, strength, and behavior of our wood materials should lead to much needed economy in the use of our existing forest resources.

CONTINUATION OF TIMBER INVESTIGATIONS.

The fact that under existing economic conditions the time for the application of the first kind of knowledge, although gradually approaching, seems not as yet ripe invites concentration of attention upon investigations of the latter kind, which leads to information immediately available in practice, and may indirectly induce a more rational use of our wood supplies. Hence the division has for some years past occupied itself mainly with furnishing new and valuable information on subjects which concern the wood consumer; and, in the opinion of the writer, no more fruitful field of work could be found for this division than that outlined in its timber investigations. The continuance of these studies, but in an even more concentrated and systematic manner than has been possible under existing conditions, is therefore earnestly recommended. The data so far collected will gain in practical value in proportion as more data are added, for with so variable a material as wood a large number of observations is necessary before any reliable knowledge is established.

NEED OF A SUITABLE LABORATORY.

An energetic, concentrated effort in this direction, which requires the fitting up of a suitable laboratory and the employment of more skilled investigators, leading to well-grounded information and definite facts that can be applied at once by practical men, is, in the opinion of the writer, more essential to the cause of forestry than diffuse writings on the need of forest conservancy and tree planting. Side by side, and in more or less close connection with this work, the biological studies of our timber trees and tree measurements can be carried on, upon which, as stated, must be based the forestry practice of the future. The forest plantings in the West, furnishing practical object lessons and knowledge as to proper practice in the attempts to establish groves on the Western plains, should be continued and perhaps extended as to localities.

CANVASS OF FOREST CONDITIONS.

An attempt at a canvass of our forest conditions, State by State, is again recommended, in order that we may be able to speak with more definite knowledge and precision regarding the problems of our wood supply. Such statistical inquiry, however, requires special methods

and the employment of specially trained men, if it is to lead to practical and useful results, and can not be carried on with advantage by the present office force. Personal inspection in the field by men familiar with the requirements of the trade in forest products is one of the necessities if such a canvass is to produce tangible results.

For such an inspection of the forests of Arizona the writer has just set out, the purpose being to give a comprehensive description of its forest conditions and their relation to other industries, which might serve as a basis for the formulation of a forest policy when the Territory is to become a State. Similar inspection and reports by competent men, comprising definite confined areas, would produce more attention and active interest in our forestry problems than the general discussions, which so far have been alone within the scope of the division.

REPORT OF THE ENTOMOLOGIST.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF ENTOMOLOGY,
Washington, D. C., July 24, 1896.

SIR: In accordance with your circular letter dated June 27, I submit herewith my executive report as chief of the Division of Entomology for the fiscal year ending June 30, 1896.

I have divided the report into three sections, as follows:

(1) A review of the operations carried on in the division during the fiscal year 1896.

(2) An outline of proposed work for the fiscal year 1897.

(3) Memoranda in reference to work for the year 1898, for use in the preparation of estimates.

Respectfully,

L. O. HOWARD,
Entomologist.

Hon. J. STERLING MORTON,
Secretary.

(1) A REVIEW OF THE OPERATIONS CARRIED ON IN THE DIVISION OF ENTOMOLOGY DURING THE FISCAL YEAR 1896.

The operations of the division during the fiscal year 1896 may be classified as follows:

(*a*) Special investigations on certain specific injurious insects and upon groups of insects affecting specific crops.

(*b*) Experiments with insecticides and insecticide machinery.

(*c*) Work on the geographical distribution of injurious insects.

(*d*) General investigations on the life histories of injurious insects.

(*e*) Preparation of circulars of information.

(*f*) Bibliographic work.

(*g*) Determination of specimens sent in by the entomologists of the State experiment stations and by other workers.

(*h*) Correspondence.

(*i*) The mounting and preparation of specimens for permanent preservation.

(*k*) Preparation and proof reading of reports and bulletins.

(*l*) Work on the exhibit of insects for the Atlanta Exposition.

A brief account of the operations of the division under each of these heads during the time specified is here given:

(*a*) Several important investigations have been carried on. The investigation of the San Jose scale, mentioned in my reports for 1894 and 1895, has been practically completed with the publication of Bulletin No. 3, new series. This bulletin, issued in March of the present

year, contained a complete account of the history and present status of this insect in America, giving in full for the first time the complete life history of the species and the results of the extensive experiments which have been carried on with regard to remedies. Practically nothing remains to be done with regard to this insect except the enforcement of regulations which have been adopted by several of the States, which will probably result in the restriction of its spread and the stamping out under State authority of the present centers of establishment.

The investigation of the Mexican cotton-boll weevil, mentioned in my last report, has been carried on through the year. The entomologist visited Texas in December, 1895, two assistants were kept in the field during the autumn of that year, and another one visited Texas in May. A second circular, conveying the results of these investigations, was published both in English and Spanish and distributed throughout the State of Texas. Some further investigations are necessary and some further experimental work remains to be done. This, however, can not be carried on until the coming autumn. A complete bulletin on this insect has not yet been prepared, but one will probably be published during the present year. The circulars, from their concise form, meet the practical demand better than a more elaborate bulletin.

An investigation of the insects of the household was found to be desirable during the year. It was carried out as fully as time would permit and the manuscript is now ready for the printer. The constant demand upon this office for information concerning the noxious insects of households will justify the publication of this bulletin in large edition.

During the term of office of my predecessor the preparation of a report upon insects affecting domestic animals was begun under his direction by Prof. Herbert Osborn, then a field agent of the division. The manuscript was only partially completed by Professor Osborn, and it was Dr. Riley's desire to prepare certain sections himself and to publish the work conjointly with Professor Osborn. His resignation from office, and subsequent untimely death, prevented the realization of his hope, and during the present fiscal year Professor Osborn has been especially employed to prepare the missing portions. The completed report has now been sent to the printer and constitutes an admirable and practical summary of our knowledge of all insects which annoy or injure live stock in the United States. It will undoubtedly be of great value to stock raisers.

An investigation of the general subject of insects injurious to shade trees in cities and towns was undertaken at the beginning of the fiscal year. A summary account of a portion of the results of the investigation was published under the title "The shade tree insect problem of the Eastern United States" in the Yearbook for 1895.

In the course of the investigation of the scale insects of the orchard, the partial results of which were published in the Yearbook for 1894, it was found that the present knowledge of the scale insects of the genus Lecanium was so slight that a thorough systematic investigation of these creatures was very desirable. Such an investigation has been begun and carried on during the entire year.

The preparation by the first assistant entomologist of a paper upon the principal insect enemies of the grape for the Yearbook of 1895 necessitated further investigation of the insects affecting the vine-growing industry, and this work has been successfully completed.

Two elaborate investigations which were mentioned in the last annual report, viz, the study of the insects affecting citrous fruits and fruit trees and of the insects affecting stored foods have been carried on through the year. Both investigations are in an advanced condition, and will be embodied in reports which can not fail to be of value to the industries concerned.

A brief study of the shot-hole borers of orchard and shade trees has been made during the year, the results of which will be displayed in an article in the Yearbook for 1896.

Two technical pieces of work of considerable magnitude have been entered upon—the one a monograph of the flies of the family Tachinidæ, all of which are parasitic upon injurious insects, and the other a monograph of the parasitic insects of the family Braconidæ, many of the species of which are important factors in the reduction of the numbers of injurious insects. Both of these monographs are approaching completion, and will form valuable additions to the series of technical bulletins of the division.

The results of technical investigations of three important groups of insects have been completed and published during the year.

(*b*) A large series of experiments have been made during the year with insecticides of different kinds, testing both their effects upon insects and upon foliage of different plants under varying conditions. The results will be summarized in a paper by the first assistant entomologist, which will soon be published.

Some two years ago the entomologist became impressed with the desirability of the use of steam spraying apparatus against insects affecting shade trees in large cities and on a large scale in orchards, and the purchase of such an apparatus for experimental use at the Department was considered, but was not at that time deemed advisable. Private enterprise has since undertaken the work and city governments have followed. As a result many large scale spraying machines operated by steam are in use at the present time. The division has collected the data concerning these machines and has secured a series of illustrations of many of them, and a summary of the information in this direction which has been brought together will be published in the Yearbook for 1896. Hand machines and accessories have shown little improvement during the year. One or two new spray nozzles, however, have been tested.

(*c*) The work of mapping all collectible data concerning the exact distribution in injurious numbers of the prominent crop pests of the country has been continued through the season. The notes of the Division of Entomology for the past eighteen years and the correspondence of the office during the same period have been card catalogued, with the result that a large amount of information in shape for definite use has been brought together. The assistance of entomologists to State experiment stations has been cheerfully accorded, and results of value in the lines indicated in the last annual report are anticipated.

(*d*) Constant work in the insectary has been carried on in the investigation of the life history of species which have appeared in different parts of the country in injurious numbers. Notes upon 429 species not previously mentioned in the books of the division have been made.

(*e*) A few more circulars of information have been prepared during the year. Although but fifteen have so far been published, they have proved of very great benefit. They have reduced the amount of

necessary letter writing and have proved in several instances to be a great convenience. For example, one of the earliest of the series was a circular (No. 4) upon the army worm. Its preparation was suggested by a rather uncommon outbreak of the army worm in portions of Wisconsin, Michigan, Maryland, and Virginia in the early summer of 1894. Only a small portion of the edition was distributed at that time, but when in the spring and early summer of 1896 the army worm again appeared, and this time in portions of ten States, constituting on the whole the most serious outbreak of this insect known in the history of the country, the division was at once able to send out copies of this circular broadcast and to reach the farmers in affected regions both directly and indirectly through the republication of the circulars in the newspapers.

(*f*) Work upon the bibliography of American economic entomology has been continued. The publication of the final part of the portion of the bibliography which has been prepared by Mr. Samuel Henshaw (bringing the entire subject down to the close of the year 1888) has been unexpectedly delayed. It will probably, however, be published before the close of the calendar year 1896. Nearly the entire time of one assistant has been devoted to current bibliographical work, and during the year an elaborate general index to the 7 volumes of Insect Life has been prepared and is now in the hands of the office of publications.

(*g*) It is difficult to estimate the number of specimens which have been determined for station entomologists and other workers, though there have been certainly not less than 5,000. The time of two assistants has been very largely occupied in this work, which is one of the most valuable features of the labors of the division, inasmuch as it largely facilitates the work of State officials.

(*h*) By means of circulars, the bulk of correspondence has been reduced to some extent, but about 5,500 letters in response to inquiries about injurious insects have been written during the year.

(*i*) While the Division of Entomology has not built up a large systematic collection of insects, it has done a great deal of work in the way of preparing insects for the cabinet, and it has established a biologic collection illustrating different stages of insects injurious to growing crops, which is of considerable value. Upon the death of Dr. Riley, honorary curator of insects of the United States National Museum, the Entomologist of the United States Department of Agriculture was appointed to fill the position. This brings the two institutions into close relations and enables the depositing of all collections of value in a fireproof building. The collection of insects of the National Museum is of very great use to the Division of Entomology, Department of Agriculture, in the way of consulting and naming material, and the Department of Agriculture is of corresponding value to the department of insects on account of the fact that its large accumulations of specimens are deposited there from time to time. The work in this direction during the past year has been of especial note. Two experts are employed in mounting and preparing specimens.

(*k*) With the close of the fiscal year ending June 30, 1895, the publication of the periodical Insect Life was discontinued by order of the Secretary. In its place were started two series of bulletins—the one general, to include matter of practical and widespread interest, and the other technical to incorporate scientific results of the work of the

division. The publications of the year have included, aside from reprints, 3 numbers of the new general series, 4 numbers of the new technical series, 5 circulars, and 4 contributions to the Yearbook for 1894 and 1895, all issued during the fiscal year ending June 30, 1896, and the total number of printed pages aggregating 681. The most popular of the publications of the year has been the "Manual of Instruction in Apiculture," which was published as Bulletin No. 1 of the new general series. The original edition was speedily exhausted and a special edition of 20,000 copies was subsequently printed by order of Congress. Of this edition the 5,000 copies placed at the disposal of the Department were distributed before the close of the fiscal year. Next in degree of popularity has been the bulletin on the San Jose scale, for which there has been a steady call, and, as noted above, large numbers of the circulars on the army worm have been sent out on account of the injurious occurrence of this insect.

(2) AN OUTLINE OF PROPOSED WORK FOR THE FISCAL YEAR 1897.

In spite of the completion of several investigations during the fiscal year 1896 there still remain several as yet incomplete. These are the Mexican boll weevil, insects injurious to citrous fruits and trees, shade-tree insects, insects injurious to stored foods, and the geographical distribution in injurious numbers of the principal injurious insects of the United States. Work upon these five subjects will largely occupy the attention of the office during the fiscal year 1897. The occurrence of injurious grasshoppers or locusts in portions of Nebraska and Colorado has indicated the necessity for immediate investigation in order to enable the Department to predict the probabilities for the summer of 1897, and an investigation of this matter will soon be undertaken. Some attempt will be made to establish the predaceous insects imported by the State of California from Australia in eastern orchards affected by the San Jose scale. While any great benefit is hardly to be expected from this experiment, it is considered to be worth the trial, particularly as it can be undertaken without expense to the Department. From the nature of the work of the division it is impossible to anticipate the special subjects for investigations which it may at any time become necessary to undertake. The beginning of nearly every season brings some injurious species prominently to the front. Usually this is some species which has already been investigated by the Department and concerning which the Department has the necessary literature for distribution. Frequently, however, species become prominent upon which the Department is not prepared to give authoritative information, and in that case an investigation must be begun.

(3) MEMORANDA IN REFERENCE TO WORK FOR THE YEAR 1898, FOR USE IN THE PREPARATION OF ESTIMATES.

It is impossible at the present time to make any elaborate plans which may affect the estimates of the Secretary. The force of the division under the present policy of the nonemployment of permanent field agents is sufficiently large for the carrying on of the amount of work which can be done with the appropriation which has been made for the past few years. There are undoubted opportunities for the enlargement of the work of the office, but the Entomologist hesitates to make recommendations in this direction at present.

REPORT OF THE BOTANIST.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF BOTANY,
Washington, D. C., September 10, 1896.

SIR: I have the honor to submit herewith my fourth annual report of the operations of the Division of Botany, covering the period from July 1, 1895, to June 30, 1896.

Respectfully,

FREDERICK V. COVILLE,
Botanist.

Hon. J. STERLING MORTON,
Secretary.

WORK OF THE YEAR.

INTRODUCTION.

The progress of the Division of Botany in the fiscal year 1896 may be briefly characterized as showing increased efficiency in the divisional staff, an increase in productive capacity as evidenced by the publications issued, and an increase in the relative amount of money devoted to investigations. In private institutions which are carrying on research work the proportion of money paid for clerical services is relatively small, but in governmental establishments it is commonly large, and there is a constant tendency toward such an increase of clerical assistants as to be a serious drain on funds primarily intended for research work. It is gratifying therefore to be able to record that, at the close of the fiscal year 1896, 62 per cent of the money devoted to salaries was being paid to investigators, men who had received careful special training for their work. This, when compared with the percentages for the three preceding years, shows a continued improvement, for, at the end of the fiscal year 1893, 35 per cent was being paid to investigators; in 1894, 42 per cent; and in 1895, 57 per cent.

One general feature deserving particular mention is the policy of detailing for special field work the various assistants in the division, when such field work is required, instead of appointing temporary special field agents for the purpose. During the past year this has been practiced as far as possible, and the results not only warrant a continuance of the plan, but demonstrate conclusively its positive benefits to the Department. An assistant on the regular staff, from his office experience and his consequent knowledge of the exact kind of information desired, is usually better equipped for such field work than a casual appointee, even though the latter may have an equal

technical education. Furthermore, the information absorbed by an intelligent assistant while in the field is seldom confined to the particular subject which he is sent out to investigate and upon which he presents his report. He learns a great many other facts bearing on botanical agricultural questions, and these, while not included in his report, are often of the greatest importance in other subsequent investigations. In the case of a temporary special agent only the written report on a specified subject is put on file, and a great deal of valuable accessory information is lost. Essentially, the assistants constitute a trained corps of experts in various lines whom the Government pays to furnish information valuable for the promotion of agriculture. Most of them are young men who presumably will remain many years in the service, and the Government can well afford to give them the means for maintaining the best possible equipment.

NATIONAL HERBARIUM.

During the fiscal year 1895, as stated in my last report, about three-fourths of the National Herbarium was moved from the Department building to fireproof quarters in the National Museum. Since that time an additional balcony has been provided by the Museum authorities, and all the remainder of the herbarium proper in the custody of the Division of Botany, with the exception of the Coniferae, has been transferred to the Museum. It is hoped that before the end of the fiscal year 1897 space will be provided for the final transfer of the remaining portion of the collections.

For several years it has been felt by the Department that the increasing cost of maintaining the herbarium required too large an expenditure of the funds appropriated for botanical investigations and experiments, and it is a pleasure now to announce that, following the transfer of the herbarium to the actual custody of the National Museum, the appropriations of that institution have been sufficiently increased to enable it to assume the financial responsibility of the care and maintenance of the herbarium. The Department of Agriculture, therefore, is entirely relieved of accountability in this direction. It is a pleasure also to report that the National Museum has appointed on its herbarium staff Dr. J. N. Rose and Mr. C. L. Pollard, formerly assistant botanist and assistant curator, respectively, in the Division of Botany, together with the force of clerks and mounters heretofore employed on the herbarium, the botanist of the Department retaining, with the consent of the Secretary of Agriculture, the position of honorary curator of the herbarium under the National Museum.

WEED INVESTIGATIONS.

The work in weed investigations has been carried on along the following lines: (1) furnishing information to farmers who have sent weeds to the Department with requests for their identification and for advice regarding their treatment; (2) collecting and recording information of every kind about weeds; (3) warning State experiment stations and local authorities of the presence of dangerous weeds in their respective States or localities; (4) preparing manuscript for publication.

Plants have been received from all parts of the United States with requests for information in regard to their names, characteristics, and methods of eradication. To all of these requests replies are made by

letter or printed circular. The plants about which the greatest number of complaints have been received during the past year are Canada thistle (*Carduus arvensis*), wild onion (*Allium vineale*), bull nettle (*Solanum elaeagnifolium*), Johnson grass (*Andropogon halepensis*), penny cress (*Thlaspi arvense*), and sand bur (*Cenchrus tribuloides*).

Information has been collected about nearly all the most injurious weeds of the United States and recorded or tabulated for future use. It includes notes upon their present distribution, means and routes of introduction, and rapidity of dissemination, and upon methods of eradication that have been tried, either successfully or unsuccessfully.

In connection with the work of revising the mailing list of the Division of Botany a circular was sent to each address requesting special information in regard to certain bad weeds. The returns from these circulars have been collated and recorded, and the distribution of the several species has been platted upon maps. By this means very accurate information in regard to the geographic distribution of these plants has been obtained in such form as to indicate in what regions they are likely to become troublesome hereafter and where they may be neglected without danger. A base map has been designed and printed upon which these facts of plant distribution may be platted, ready for reproduction by photo-engraving.

During the past fiscal year the officers of the State experiment stations or the State departments of agriculture in five States have received from this Department their first warning of the presence, in their territory or in dangerous proximity, of the Russian thistle. In each case these warnings met with a hearty response, and active measures were adopted to exterminate or prevent the further spread of the plant. State authorities in some of the States have also been notified of the introduction of tumbling mustard, woolly mullein, and other dangerous weeds. These timely warnings have already produced good results, and much benefit may be expected in future from a free exchange of information with the proper local authorities toward the adoption of measures to prevent dangerous weeds from becoming established in this country or in new regions.

Papers have been prepared for publication as follows: Circular No. 3, revised, Russian Thistle; Bulletin No. 17, Legislation against Weeds; Table of Two Hundred Weeds, published in the Yearbook for 1895; Circular No. 7, Tumbling Mustard; and Circular No. 9, Canada Thistle, nearly ready for publication.

SEED LABORATORY.

The investigations in the seed laboratory have been interrupted during the year by two large pieces of work, the preparation of an exhibit for the Atlanta Exposition and the testing of the seeds purchased by the Department of Agriculture for distribution in the spring and early summer of 1896. During May and June almost the entire time of Mr. Hicks and his assistants was devoted to testing and reporting upon the seeds purchased by the Department for Congressional distribution. Tests to the number of 2,230 were made, covering 129 varieties of vegetable seeds and 65 varieties of flower seeds. This large number of trials was made necessary by the fact that the seed was tested by several methods in order to throw light upon the conditions best suited for the germination of different varieties. A full report upon these tests has been completed and submitted to the Department authorities.

The annual report for 1894 recommended the elaboration and adoption of some system of grading seeds numerically, instead of using such trade names as "prime," "extra prime," and "choice," which always have a varying value. The experiments thus far conducted by the seed laboratory and the determination of the Department authorities this year to secure good seed have furnished the means and the occasion for issuing a series of such numerical grades, with tentative standards for each variety. It is believed that by this means we shall be able to designate much more accurately than heretofore for trade purposes the real value of any lot of seeds placed upon the market.

The clover seed investigation begun in the summer of 1894 has been continued so far as the interruptions of other urgent work permitted. In July, 1895, Mr. Hicks made a trip to a portion of the clover-seed districts of Wisconsin, Minnesota, Kansas, and Missouri, visiting the principal seedsmen in Chicago, St. Paul, Milwaukee, Minneapolis, Kansas City, and St. Louis, directing his attention while in Wisconsin particularly to the study of alsike clover. From January to April, 1896, Mr. Pieters made 371 germination tests of clover seed obtained the preceding season from American farmers and seedsmen. The work on this subject will be pushed to completion during the next few months unless other unforeseen interruptions arise.

Two illustrated articles were furnished for the 1895 Yearbook, one by Mr. Hicks on "Oil-producing seeds," and one by Mr. Pieters on "Testing seeds at home." A four-page circular by Mr. Hicks on standards of the purity and vitality of agricultural seeds has also been issued.

The equipment of the seed laboratory has been improved in several directions during the past year. Bottles of seeds to the number of 2,685 have been added to the seed collection. Of these 921 were received from the Royal Botanic Garden, Dublin; 282 were obtained in California, while most of the remainder were added by local collectors, largely by members of the division working in the vicinity of Washington. The total number of specimens now in the seed collection is 10,123. In addition to seeds, about 200 alcoholic specimens of seedlings and fruits have been secured, as well as a set of herbarium specimens of seedlings grown in the Department greenhouses.

The work of abstracting seed literature has been continued until the cards have now reached the number of 2,296. The value of these abstracts, which are arranged in index form, is constantly apparent.

In addition to the greenhouse space which was turned over to the Division of Botany at about the close of the fiscal year 1895, and which throughout the year has been indispensable in conducting our various seed tests, a small but much-needed out-door space was placed at our disposal in the spring of the present season. This has been devoted chiefly to experiments on the relative yielding capacity of seeds selected with respect to size. Neither the greenhouse nor the out-door space now available, however, is at all sufficient for the needs of our present investigations.

The laboratory has been enlarged by the addition of one room fitted up for an office and a second basement room devoted to general experimental work. The principal increase in apparatus has been a sterilizing chamber for sand, pots, etc., a specific-gravity balance, a Vienna germinating chamber, a Swedish seed-preparing machine, a clover seed investigating machine, an apparatus for use in testing grass seeds, and an instrument for ascertaining the proportion of oily and mealy grains in a specified sample.

POISONOUS PLANTS.

The work of the past year has been devoted largely to the development and extension of certain fundamental requirements, the increase of the library and reference collection of drugs, the broadening of the correspondence on poisonous plants, and the extension of the card index on this subject. This last work was pursued with the double object of facilitating the answering of current letters of inquiry and the acquisition of material for the ultimate publication of a manual on the poisonous plants of the United States. Over 1,000 cards have already been collected from the scientific and popular literature of botany, chemistry, physiology, and toxicology.

Special attention has been paid bibliographically to the collection of data in regard to the poisonous species of two families of plants, the *Ericaceae* and the *Anacardiaceae*. Information regarding the former has also been augmented through correspondence and by experimentation. An extended report has been prepared, but the work of investigation is not yet complete. The results obtained up to date show that a chemical antidote has been found for andromedotoxin, the poisonous constituent of poison laurel (*Kalmia latifolia*) and other plants of the family *Ericaceae*. The utility of this antidote has thus far been shown only in the laboratory by chemical experiments and by experiments on guinea pigs; but its usefulness with larger animals, especially those like cattle and sheep, which live on bulky foods, is yet to be demonstrated.

The experimental work on the *Anacardiaceae*, the family to which poison ivy (*Rhus radicans*) belongs, was confined to a verification of the results of other recent investigators on the properties of the poisonous principle, toxicodendrol. Large quantities of toxicodendrol were also shown to exist in *Rhus potentillaefolia*, a species of poison oak lately rediscovered in Mexico.

Two toxicological experiments were tried with extracts from a native species of flax (*Linum rigidum*), which we are informed is killing sheep in Texas. The results were affirmative, although the plant has not been generally recognized as poisonous.

Cases of poisoning involving over a dozen plants in other families have been presented by correspondents for consideration and advice. Four of these caused nearly fatal catastrophes to nine individuals; the others were fatal to animals. Four groups of species are especially interesting on account of the extent of the damage they inflict. These are the loco weeds (*Spiesia* and *Astragalus*), the poison laurels (*Kalmia*, *Rhododendron*, and *Azalea*), the larkspur (*Delphinium*), and the sneeze weed (*Helenium autumnale*). All are reported to be killing cattle by the hundreds. *Cicuta vagans*, a little known plant related to poison hemlock, is also killing many cattle in northern California, Oregon, and Washington. All these plants need careful investigation.

PLANT RESOURCES.

In the season of 1895 two field agents were employed for work in Idaho, Mr. John B. Leiberg in the Cœur d'Alene Mountains, and Prof. Louis F. Henderson in the Salmon River Mountains. Mr. Leiberg's general report on the botany of the Cœur d'Alenes, which contains a large amount of valuable information, particularly on the timber conditions of the region, will soon be transmitted for publication. The data contained in Professor Henderson's report have been

filed for use in connection with further work, which it is proposed t carry on in the mountains of the same State. In the present seaso Mr. Leiberg has begun a careful survey of the plains of southeaster Oregon to connect with and complete his work of 1893 and 1894 i the plains of eastern Washington and middle Oregon.

PUBLICATIONS.

Six numbers of the Contributions from the United States Nation: Herbarium have been issued during the year, one bulletin of the Div sion of Botany, three circulars, and five articles from the Yearbool making altogether 615 printed pages.

These publications are enumerated in detail as follows:

Pure Seed Investigation. By Gilbert H. Hicks. Reprint of pp. 389-408, Yearboc of the United States Department of Agriculture, 1894.

Contributions from the United States National Herbarium, vol. 3, No. 3. Flora the Sand Hills of Nebraska. By P. A. Rydberg. Issued September 14, 189

Contributions from the United States National Herbarium, vol. 3, No. 4. Repo on a Collection of Plants Made by J. H. Sandberg and Assistants in Northei Idaho in the Year 1892. By John M. Holzinger. Issued November 23, 1895.

Contributions from the United States National Herbarium, vol. 3, No. 5. Repo *on Mexican Umbelliferæ, mostly from the State of Oaxaca, Recently Collect* by C. G. Pringle and E. W. Nelson. By John M. Coulter and J. N. Ros Descriptions of Plants, mostly new, from Mexico and the United States. E J. N. Rose. Issued December 14, 1895.

Circular No. 3, revised edition. The Russian Thistle. By Lyster H. Dewe Issued December 17, 1895.

Contributions from the United States National Herbarium, vol. 3, No. 6. Botai of Yakutat Bay, Alaska. By Frederick Vernon Coville. With a field repo by Frederick Funston. Issued January 15, 1896.

Bulletin No. 17. Legislation against Weeds. By Lyster H. Dewey. Issued Jan ary 25, 1896.

Contributions from the United States National Herbarium, vol. 3, No. 7. Pr liminary Revision of the North American Species of Echinocactus, Cereu and Opuntia. By John M. Coulter. Issued April 1, 1896.

Circular No. 6. Standards of the Purity and Vitality of Agricultural Seeds. E Gilbert H. Hicks. Issued May 15, 1896.

Some Additions to Our Vegetable Dietary. By Frederick V. Coville. Reprint pp. 205-214, Yearbook of the United States Department of Agriculture, 189

Oil-Producing Seeds. By Gilbert H. Hicks. Reprint of pp. 185-204, Yearboc of the United States Department of Agriculture, 1895.

Testing Seeds at Home. By A. J. Pieters. Reprint of pp. 175-184, Yearbook the United States Department of Agriculture, 1895.

Two Hundred Weeds: How to Know Them and How to Kill Them. By Lyst H. Dewey. Reprint of pp. 592-610, Yearbook of the United States Departmei of Agriculture, 1895.

Report of the Chief of the Division of Botany. By Frederick V. Coville. Repri of pp. 159-164, Report of the Secretary of Agriculture for 1895.

Contributions from the United States National Herbarium, vol. 3, No. 8. Flora the Black Hills of South Dakota. By P. A. Rydberg. Issued June 13, 1896.

MISCELLANEOUS WORK.

The preparation of our exhibit at the International and Cotton Stat Exposition, Atlanta, Ga., consumed a large amount of time that woul otherwise have been devoted to investigations. Most of the Depar ment exhibits at Atlanta were drawn largely from exhibits made b the Department of Agriculture at Chicago in 1893, but in the case the Division of Botany none of the Chicago material was available fc that purpose. It was necessary, therefore, to prepare an entirel new exhibit, a work which, together with the necessary supervisio at Atlanta, required the whole time of one assistant for five montl

and of two other assistants for shorter periods. In none of these three cases was the salary of the assistant paid from the exposition fund, and in general it is true that the special appropriations for exposition purposes are so far from adequate that the preparation of exhibits often draws heavily on the regular Department resources.

In the correspondence of the division 3,325 letters have been written and copied, in addition to an indefinite number of printed circulars and other publications sent out in reply to letters of inquiry on special subjects.

In compliance with a general order relative to divisional mailing lists, to the effect that only educational institutions, agricultural experiment stations, libraries, foreign exchanges, and persons cooperating in the work of the division could hereafter receive the publications regularly, a revision of our mailing list was made. Since a valuable part of the operations of the Division of Botany depends upon collated information received from the botanists of the country, the object of revision was to insure a corps of reliable botanical correspondents. A duplicate set of cards from the revised alphabetical list, rearranged geographically by States, counties, and towns, is now used as a correspondence list in securing any required botanical data from a particular locality.

In the fall months of 1895, in response to the urgent requests of gentlemen interested in maintaining the game industries of the Chesapeake Bay region, a preliminary investigation was made of the food plants of the wild duck—what they are, under what conditions they increase or decrease, and what means may be taken for their artificial propagation. This investigation, in which the facts thus far brought out are interesting and valuable, has not yet been completed.

All the official correspondence of the Division of Botany since its organization in 1869 has been bound up in convenient file cases, so as to be easily accessible. This mass of correspondence contains a large amount of material of value as a partial record of the progress of botanical science in the United States during the past quarter-century, and should be placed where it is not liable to destruction by fire.

NEEDS OF THE DIVISION.

In the last annual report attention was called to the need of a botanical artist who should be a permanent member of the division staff, and preliminary steps have now been taken to secure a competent man through the Civil Service Commission. Similar steps have also been taken to secure a man of scientific horticultural training to take charge of certain parts of our seed investigation work. In addition to these wants, which are now in a way to be satisfactorily met, the Division of Botany is in need of a building and of a reference collection of economic plants.

BUILDING.

It seems hardly necessary to repeat the statements of former years relative to the need of better quarters. So far as the possibilities of the present buildings permit, we are fairly well provided for, but the disadvantages of inconvenient situation, the wide separation of laboratory, greenhouse [illegible] ra messenger service, together with bad [illegible] that valuable records, apparatus, books [illegible] ime be destroyed by

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fire, still demand for their elimination the construction of a modern building. This need is so much felt by nearly all other branches of the Department that it is unnecessary to go further into our special requirements.

COLLECTION OF ECONOMIC PLANTS.

While the National Herbarium was still in the custody of the Department it was used as a basis for the comparison of any plants requiring identification, illustration, or description. But those collections are notably deficient in horticultural varieties and the various cultivated plants with which the Department has to deal, while, furthermore, the present situation of the herbarium in the National Museum building renders it inconvenient for quick consultation. The necessity has arisen therefore for a good reference collection of economic plants, containing particularly weeds, poisonous and medicinal plants, native plants useful as foods, fibers, dyes, etc., and all cultivated plants and their horticultural varieties—in brief, a collection suitable for ready reference in the various investigations now in progress.

REPORT OF THE AGROSTOLOGIST.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF AGROSTOLOGY,
Washington, D. C., September 1, 1896.

SIR: I have the honor to submit my second annual report upon the work of the Division of Agrostology, covering the past fiscal year, together with an outline of the plans for the current fiscal year and suggestions for the future work of the division, presented in accordance with your letter of instructions under date of June 27, 1896.

Respectfully,

F. LAMSON-SCRIBNER,
Agrostologist.

Hon. J. STERLING MORTON,
Secretary.

WORK OF THE YEAR.

The primary objects of the division are to bring to the knowledge of the people the grasses and forage plants of our own country and those of other countries which may possess desirable qualities, to assist in introducing into cultivation species of marked merit, to extend our knowledge of the varied uses of grasses, and to advise upon the proper selection and best methods of culture of those kinds designed for special purposes. The work of the division for the past fiscal year has been chiefly prosecuted along these lines, with very satisfactory progress and results.

FIELD WORK.

In 1895 two field agents were assigned to work in the Rocky Mountain region for three months, under instructions to collect roots, seeds, sheaves, and herbarium specimens of all the native grasses and forage plants of the sections visited, to make observations relative to the abundance and apparent value of the kinds found, and upon the value of the territory traversed for grazing or farming purposes. The collections made were large and valuable, and the work of these agents has been prepared in the form of a report for publication. This report will include a complete list of the plants collected, the determination of the species having been chiefly made by the office force. The regions visited by the agents are of much interest to farmers, particularly to stock raisers, and any additions to the knowledge of the forage resources of that section of the country can not fail to be of value to those who engage in these pursuits.

In the spring months of the present year, 1896, an agent was appointed to visit certain regions of southern California, Arizona, and New Mexico for the purpose of making similar observations and collections. His work in the field was conducted during the months of March, April, and May, and his report was duly presented. The work begun last year in the Rocky Mountain region has been continued the present season by the appointment of field agents and local observers, two of whom have been working in Colorado, one in Montana, one in North Dakota, one in South Dakota, and one in Nebraska. Aside from the field work performed by these specially appointed agents, members of the scientific force of the division have been detailed for brief periods to work in the field. One was sent to the southeastern United States to collect specimens and information relative to the grasses in the region of the Gulf, and a report, as the result of this detail, was published as Bulletin No. 1 of this division. A portion of the results of an extended trip through parts of Missouri, Iowa, South Dakota, Nebraska, and Kansas, made by another member of the force, was published in an article in the Yearbook for 1895, under the title of "Forage conditions of the prairie regions." An investigation was made also of the salt marshes along the coasts of the Eastern States, and some of the data collected were embodied in an article on the "Grasses of salt marshes," published in the last Yearbook. Generally speaking, this field work resulted in the collection of a large amount of useful material and specimens, which will be of constant use to the division.

GRASS GARDENS.

The grass gardens established last year have been maintained and much new material added to them. Experiments have been made in the cultivation of native grasses, seeds of which were obtained by the various workers in the field, and from these experiments important results are expected. Some of the species cultivated indicate large productiveness and excellent quality for hay in some cases, in others for grazing. Buffalo grass, referred to in last year's report, has maintained an excellent growth, forming a very compact, close turf, which has attracted a good deal of attention. This grass seeds freely here, and is readily propagated by the rooting joints of the stem. Japanese lawn grass has made a good growth in the garden at the Department, and at the grass station at Knoxville, Tenn., it was tested on both high and low land with equally favorable results. It withstood the severe drought of 1895 on high land and passed the winter season without injury. This grass is somewhat similar in its habit of growth to buffalo grass, but its leafage is somewhat coarser and the turf it forms is apparently more compact. It is probable that this grass will make an excellent lawn grass for tennis courts and yards in the Southern States, and it may prove to be nearly equal to Bermuda for pasturage.

Seeds of a variety of barnyard grass (*Panicum crus-galli*) were obtained by one of our agents from the Mohave Indians, who use the grain for food. These seeds were planted both here in Washington and at Knoxville, and produced a very vigorous-growing grass, attaining the height of 6 or 8 feet, and producing a great quantity of seed. The seed product of this grass may have some value, comparable with that of millet, and as the amount of forage produced is large, it may serve a useful purpose in the Southern and Southwestern States as a soiling plant. A variety of red fescue, native in Tennessee, has been

grown for several years at the grass station there, and has come to be highly esteemed. It makes a soft, durable turf, and is evidently valuable both for lawns and for pastures. Various-leafed fescue, grown at the Tennessee station, attained a height of 2 feet and continued green throughout the winter months, and is believed to be equal, if not superior, to meadow fescue as a pasture grass. A species of Paspalum, seeds of which were procured from Mexico, has exhibited a remarkable vegetative growth in the grass garden of the Department. The amount of forage produced, together with the peculiar habit of growth of the plant, creeping, as it does, over the ground and rooting at the joints, from which spring leafy branches, indicate the possession of much value as a forage plant for low-lying clay lands. Many of the grasses introduced this year have succeeded fairly well, but it is thought best to wait another season before enumerating them. Two of the Australian salt bushes have been cultivated. They have made a luxuriant and apparently tender growth upon the grounds of the Department. The success of their propagation in the semiarid regions of the West, upon alkaline soils, is awaited with interest.

COLLECTION OF ROOTS AND SEEDS.

About 400 packages of seeds and nearly an equal number of live roots and sods were sent in by the field agents or were gathered by members of the division force, and 300 sheaves of nearly as many species of grasses were also collected. These sheaves were placed on exhibition at the Atlanta Exposition, and have since been placed in the museum of the Department. The roots and sods were planted in the grass garden on the Department grounds, or in that at Knoxville, Tenn. There have been received from foreign sources 125 packages of seeds. Two thousand and forty packages of grass and forage plant seed have been distributed to experiment stations in this country and to foreign agricultural societies and botanical gardens.

WORK ON THE HERBARIUM.

Two thousand nine hundred and thirty-two sheets of herbarium specimens of grasses were mounted and added to the herbarium during the year. A large proportion of these specimens was from the southern and western portions of our country, and the most of them were determined in the division.

The great mass of duplicates of grasses which had been accumulating in the Department for years has been labeled, arranged, and about half of the specimens arranged into sets, which are now ready for distribution. This work has involved a great amount of labor and oftentimes close application, as many of the specimens were unnamed. Many collections of single specimens of grasses have been submitted to the division for identification, and to these must be added the collections of the field agents. The largest of these, and the one demanding the most time, was that made by the two agents working in the Rocky Mountain region in 1895. It included some 700 numbers, represented by nearly 5,000 specimens.

HISTOLOGICAL STUDIES.

By the diversity in the external characters of grasses botanists have been able to distinguish nearly 4,000 species. But this diversity in size and form and shaping of parts is hardly less wonderful than the

variety presented by the internal structure of these plants. Histological investigations of grass stems, leaves, and fruits are exceedingly interesting. Intricate problems in mechanics are exhibited in the minute structure of the slender cylinders which constitute the grass stem. By a nice adjustment of the various tissues which compose it a wonderful strength is imparted to what is seemingly delicate and fragile. No more elegant tracings or beautiful lace-like designs can be imagined than those presented by the leaves of grasses when viewed under the microscope. The designer might well study these tissues, for in them he would find many new figures and combinations of lines which, could he reproduce, would command the highest admiration.

Investigations of the histological or minute structure of grasses are of comparatively recent date, and as yet these investigations are limited in extent and confined to a few species. The possibilities indicated by the work that has been done encourage the further pursuit of the subject. Nearly all that has been accomplished is due to French and German investigators, while very little has been published upon the subject in this country. The peculiar qualities of the leaves of the several kinds of grasses—the abundance of the fibrous tissue and the adaptability of the grass to humid or arid climates—are shown in their histological characters, and as the amount and arrangement of the several kinds of tissues composing the leaves varies with the species it is often possible to identify a grass by these characters alone. In fact, nearly all agree in attributing great value to histological characters in the identification of species.

During the year the investigation of the leaf structure of 60 species has been made. This work has involved the making of thousands of sections. Some were examined with a view of determining the characters, if any were presented, which would serve to identify the species, others for discovering the special peculiarities of structure of the species inhabiting dry and sandy regions, and still others were examined for individual peculiarities and for general comparison.

Four hundred permanent preparations of transverse sections of grass leaves and culms have been made, drawings of most of the tissues examined have been executed, and specimens of a large number of grass leaves have been preserved in alcohol for future examination.

PUBLICATIONS.

The publications so far have been popular in their character and designed for the farmer and general reader. They have necessarily been limited owing to the amount of routine and field work that has been required, but more particularly because of the large amount of time spent upon the preparation of matter for the proposed Handbook of North American Grasses. The elaboration of the descriptions of the species for this handbook, the selection of the specimens for the illustrations, and the oversight of the drawings and engravings have largely occupied the time both of the chief of the division and his assistants. The latter have rendered valuable aid in this work, in some instances extending to the treatment of entire genera or tribes. An artist has been almost constantly employed in making the habit sketches of the species to be illustrated, the chief of the division drawing nearly all the enlarged details of the figures thus far engraved, which number about 250. Altogether about 650 species have been drawn for the handbook. In addition to these nearly 150 original

drawings have been made in the division, besides numerous photographs which have been used in publications already issued or are now in press. Reference has already been made to the report of field agents.

The bulletins and circulars published are as follows: Circular No. 1, Note on Experimental Grass Gardens; Circular No. 2, Hairy Vetch; Circular No. 3, Salt Bushes; Bulletin No. 1, Grasses of the Southeastern United States; Bulletin No. 2, Fodder and Forage Plants, Exclusive of the Grasses.

The following papers were prepared in the division and published in the Yearbook for 1895: "Grass gardens," "Forage conditions of the prairie regions," and "Grasses of the salt marshes."

A knowledge of the varied and important uses of grasses in the arts and manufactures is not only exceedingly interesting, but often of much practical utility. During the year much time has been spent in collecting information relative to the uses of grasses in other lines than that of agriculture. The facts gathered have been partly embodied in a bulletin on Economic and Ornamental Grasses, submitted for publication July 15, 1896, and have also been used as the basis for an article on "Grasses in the arts and manufactures," prepared for the Yearbook for 1896. Among the 700 or 800 different kinds of North American grasses, there are doubtless many yet untried possessing qualities of fiber production or yielding special substances available in the arts equal in value to any of those now known.

PLANS FOR THE CURRENT FISCAL YEAR.

With the beginning of the current fiscal year the Division of Agrostology takes its place among the other divisions of the Department, its position being established by a law passed at the last session of Congress. One appointment has been made through the Civil Service Commission, adding, it is believed, an efficient worker to the scientific force of the division.

It is recommended that the lines of work already undertaken be continued, for this work, if energetically pursued, will surely yield highly valuable scientific and practical results. The importance of studying the grasses suited for permanent pasture and a careful investigation of the best methods for the propagation and cultivation of these grasses in the formation of such pastures need to be emphasized. There is hardly any part of our territory where such work is not needed or where its serious prosecution will not command public attention and support. The investigation of our hay grasses or those best suited for forage should be continued, and our attention should be directed to native species, of which we have such a large number apparently suitable for this purpose. The seeding qualities of these grasses adapted for hay should be studied and the practicability of propagating them by seeding should be considered. There are valuable native grasses and forage plants which it may safely be assumed will never be generally cultivated, because of the cost of harvesting the seed or the impracticability of sowing it when harvested. Special attention should be given to determining the best grasses for given conditions or certain peculiarities of soil or climate, where the grasses whose seeds are now procurable in the markets do not succeed under cultivation. In any investigation of our native grasses and forage plants their uses in other lines than that of furnishing hay or pasturage should not be overlooked, as there are many other purposes which

they may serve, as already intimated. Plans have been made for the investigation of lawns, their establishment and maintenance, and the best grasses suited for the formation of lawns in different parts of the country. This is an important subject, and is of interest to everyone possessing a home, whether in the town or in the country, and even to those whose only outdoor life is limited to public parks, whose lawns serve to make them attractive.

The experimental grass gardens now in operation should be maintained. It might even be well to undertake their extension or the establishment of other stations for the cultivation of certain species which for any reason we may believe will succeed in particular regions or are better adapted for propagation there than the species now cultivated.

The continuation and extension of the field work is urgent, having in view not only the investigation of the economic or agricultural qualities of our wild grasses and forage plants, but for the purpose of extending our botanical knowledge of these plants and increasing our present information regarding their geographical range and climatic and other conditions of growth. The collections of seeds of our native grasses should be encouraged and their propagation extended by distributing them to our agricultural experiment stations, and foreign institutions, agricultural societies, and botanical gardens, who will cooperate with us in our work.

Considering the scope and nature of the work of the division, its great importance to the farming community of the entire country, and directly or indirectly its importance to every citizen of the United States, the estimates for continuing the work, submitted elsewhere, must be deemed very moderate. The lines of work already undertaken, however, can be continued, and, through increased experience in the management of the operations now carried on, most valuable and important results may be obtained under the appropriations recommended.

REPORT OF THE POMOLOGIST.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF POMOLOGY,
Washington, D. C., September 10, 1896.

SIR: I have the honor to hereby transmit the report of the Division of Pomology for the fiscal year 1895–96.

Respectfully,
S. B. HEIGES,
Chief.

Hon. J. STERLING MORTON,
Secretary.

WORK OF THE YEAR.

The work of the division during the fiscal year proceeded along lines much the same as those noted in the report of last year, the divisional force being employed principally in the identification of varieties; the correction of nomenclature; the describing of valuable new varieties, and of specimens that show marked variations from their varietal types, resulting from different climatic conditions, etc.; the making of paintings in water colors of choice new varieties, showing form, size, and external appearance, together with sectional paintings showing core formation and color of flesh, seed, etc.; the modeling of specimens of the various species of choice fruits, so as to eventually have a comprehensive exhibit of the fruits of our entire country; and the cultivation and careful study of trees grafted by different methods during the past two years, planted in different localities and upon soils entirely unlike.

The receipts of specimens were more than 40 per cent larger than last year, and the number of promising new varieties brought to light during the summer and autumn of 1895 was surprisingly large, being greater than previously recorded since the formation of the division.

EXAMINATION AND IDENTIFICATION OF SPECIMENS.

By the examination of little known varieties a considerable number of synonyms were detected which were passing under names new to pomological literature. A large number of such alleged new varieties are found to consist of old sorts renamed. When such cases are discovered the grower or the disseminator is informed by letter, in order that the error may be corrected as quickly as possible. It is gratifying to report that in a majority of such cases the growers acquiesce in the decision and promptly adopt the correct nomenclature, even when it involves the loss of a prospective pecuniary profit on their part. It is believed that this constitutes one of the most useful functions of the division, for the correct nomenclature of fruit varieties in nurseries and orchards is one of the most important factors in progressive commercial fruit growing.

More than 750 descriptions of fruit varieties have been added to the files, and a large number of water-color paintings and models have been made. A collection of photographic negatives has been begun, which is expected to rapidly increase in size and usefulness in identifying varieties and for illustrating publications.

MISCELLANEOUS EXPERIMENTS.

More than 550 lots of scions, plants, and small trees have been placed with experimenters during the year, a large proportion of these having been donated by growers for this purpose, though nearly 150 lots were the product of importations made by the Department during the last two fiscal years, mainly citron, fig, and Chinese persimmon.

The experiment on methods of propagation of the apple in which the scions from Hungary were utilized, noted last year, has continued, and it is expected that a preliminary report upon it can be made soon after the close of the present growing season. In addition to this, 1,000 grafts of 10 well-known varieties were grafted and planted on the Department grounds with a view to duplicating the previous experiment, using varieties of known habit of growth and other characteristics.

An experiment in the storage of chestnuts at low temperatures during the winter for the purpose of retaining their edible properties unimpaired demonstrated that nuts held in such storage at a temperature of 32° to 34° F. from November 9, 1895, till May 4, 1896, had deteriorated somewhat in dessert quality, while nuts from the same lot stored for the same time at 12° to 14° F. were almost equal to fresh nuts in texture and flavor.

An experiment in the germination of these nuts conducted under unfavorable conditions demonstrated the superiority of the nuts stored at the lower temperature, and indicates that chestnuts for planting in nurseries can be cheaply and successfully held until planting time in this manner.

It is intended to pursue this line of investigation further during the present season, and to include some other nuts, as well as scions and trees, with a view to determine the possibilities of the utilization of coldstorage establishments by nurserymen and other propagators of fruit and nut trees.

EXPENDITURES.

Summary of expenditures, fiscal year 1895–96.

STATUTORY ROLL.

Appropriation		$6,500.00
Expenditures:		
Pomologist	$2,500.00	
Assistant pomologist	1,800.00	
Pomological clerk, stenographer, and typewriter	1,200.00	
Pomological clerk	1,000.00	
Total		6,500.00

POMOLOGICAL INFORMATION.

Appropriation for pomological information		6,000.00
Salaries of employees in Washington	$3,930.96	
Salary of special agent	824.20	
Materials, transportation, etc	237.60	
Balance unexpended	1,007.24	
Total		6,000.00

PLANS FOR ENSUING YEAR.

In addition to the work already being done in the division, arrangements should be made for a thorough study of some large orchards during the blossoming period, in which may be found the greatest number of varieties cultivated for home use, domestic markets, and for export purposes.

From the numerous reports received from all sections of the country of nonproductive orchards it seems probable there must exist a general weakness of certain varieties in the process of pollination. An accurate history of the period of bloom of each variety, i. e., date of appearance of first bloom, of full bloom and number of days of the same, of late bloom and continuance of the same, and a study of the form of blossom would constitute the only reliable data for deciding many of the difficult problems of nonproductiveness that have been propounded from time to time.

A collection of blossoms of each variety could be made at the same time. These would often prove valuable in the identification of fruits which very closely resemble each other, as color and size of petals, together with form and position of blossom clusters, show great and wide modifications in different varieties and seem to be fixed types of those bearing such close resemblances. Photographs of a typical tree of each variety thus studied could be taken at the same time, the only additional expense being the material necessary for that purpose. When sufficient material has thus been authentically obtained a bulletin fully illustrating the typical forms of bloom, foliage, growth of wood, and shape of tree of the most valuable varieties should be published as a means of thorough identification.

This line of work is worthy of careful and extended observation, as it has not been fully considered in any of the various works upon pomological literature.

What has been outlined as a course of complete study of the apple should be extended to the other commercial fruits as opportunity and means are provided.

VARIETAL HERBARIUM.

A considerable collection of the seeds of many species of fruits, including edible nuts, has already been obtained, to which it is proposed to add those of every distinct variety of any species of fruit that may be sent to the division either for examination or identification. Apart from the importance of having the means of comparing the ratio of available fruit and seed, many varieties are recognizable by the shape, size, and markings of the seed. This is more especially true of the grape than of any other species of fruit. To this collection should be added foliage, young wood, fruiting wood, and blossoms, as it may be possible to obtain them from time to time from well-authenticated trees, vines, etc., of recognized varieties.

With the additional rooms assigned to this division it will be possible to arrange an exhibit that will not only prove valuable in the identification of many varieties, but that should prove equally interesting to investigators in the line of morphology. A very small sum will be needed for glass doors to be adjusted to the shelving already arranged in convenient and well-lighted rooms adjoining the rooms at present assigned to this division upon the second floor of the Agricultural Museum building.

ILLUSTRATION OF FORMS OF GROWTH.

An instructive element of horticultural knowledge should be developed by means of the forms of growth that different varieties maintain. A knowledge of this type, whether erect, spreading, drooping, etc., often materially assists in the matter of identification. Any variation of type resulting from latitude, altitude, soil, or culture could be accurately shown by means of a photograph.

It is important to establish a complete collection of varietal forms by this means as soon as possible.

To the nucleus already established additions will be made from time to time having in view accuracy of detail, so that the inquiring pomologist may be able to find presented to his view much of value in the selection of varieties whose forms, other things being equal, are best adapted to his locality.

In connection with these views of varietal forms there will be an exhibit of blossoms, leaves, and wood of different years' growth.

The size and color of the petals, the size, shape, and serration of the leaf, taken in connection with the form of the tree and the accurate model of the fruit already prepared, will go far toward advancing the work of this division from the realm of empiricism into that of science.

JORDAN ALMOND.

Of late years there has been an increased interest manifested in almond culture. This is manifest not only in the great number of trees planted, but also in the attempt to produce new varieties from seed that may meet the demands of the market. I therefore suggest that an effort be made to introduce the "Jordan" (jardin) almond.

This variety brings the highest price in our market, often selling from 8 to 10 cents per pound higher than any other.

It is imported only as kernels, in which condition the seeds are of no use to the horticulturist for the purpose of propagation, and the variations of seedlings are so great that they would be unreliable even if the kernels retained their germinating powers.

As nearly the entire importation is from Malaga, Spain, it should be possible, by the cooperation of our minister to that country, to obtain a sufficient number of trees for experimental purposes, and to test the adaptability of the variety to our almond-producing sections.

MAPS OF FRUIT DISTRICTS.

The need for more definite information in regard to the locations and areas of the districts in the United States in which the more important fruits and nuts are grown in commercial quantities or for home use becomes more apparent yearly.

The lack of reliable statistical information, both with regard to number of trees, plants, or vines, acreage, and quantity and value of product, renders the accurate determination of these districts impossible at the present time. In view of the fact that statistical information is not likely to be obtainable for at least five years to come, and then only in case the census of 1900 shall arrange for an investigation on this subject, it seems wise to undertake a preliminary survey of the field which shall outline the districts as definitely as this can be done with present information and such as can be secured by correspondence. It is believed that data now on file in this division can be

utilized in constructing for publication a series of maps which will illustrate with sufficient accuracy to be useful the present distribution of our more important cultivated fruits. Such a series, accompanied by explanatory text, would be of great value to the fruit-purchasing, as well as to the fruit-producing portion of our population. It is hoped that a sufficient increase in the clerical force of the division will be made to provide for the preparation of such a series of maps for publication.

COOPERATION WITH STATE EXPERIMENT STATIONS.

Much information of a valuable character could be obtained by the cooperation of the several experiment stations and the Division of Pomology. As these stations are intimately associated with the Department of Agriculture in their general work, an extension of their scope of operation so as to cover such observations as would prove useful to this division could not help but be of great advantage to fruit growers in general. Individual growers as a general thing are not so situated as to make careful and comprehensive observations. Many are limited in the number of varieties and lack the means of making and carefully recording the results of their observations.

Experiment stations have, or will have in the near future, the principal varieties grown in their respective States. They are all possessed of the means of accurately estimating the elevation of their orchards, which is often a guess with the individual grower, and therefore an unreliable factor upon which to base conclusions.

The stations keep a careful record of the temperature and humidity of the atmosphere, and are admirably qualified to record the changes that occur during the critical period of blossoming. The various phenomena of growth resulting from an excess or lack of rain or snow no doubt have been carefully observed at many stations. The form, size, time, and duration of blossoming; the time of ripening and length of season of each variety; the keeping qualities of the several varieties; habit of fruitage, whether an annual or alternate year variety; the general habit of growth, which could be shown by a photograph of a typical tree of each variety, mutually observed and noted, would no doubt prove interesting and instructive to the several stations and would furnish data hitherto unobtainable by this division. These subjects, with others equally important that could be named, would prove of inestimable value to the stations and the division in properly presenting the art and science of fruit growing to the country at large.

Such mutual observations multiply the value of each individual record, and through this division a ready interchange of the conclusions reached could be had with the several stations.

In return for this, the several stations could be provided with models of typical specimens of their fruits prepared under the supervision of the Department of Agriculture, the stations paying only such price as would cover the expense of material and cost of making. Should the law regulating the expenditure of the experiment-station fund not permit this purchase, it seems to me it would be wise legislation to so amend it as to authorize such procedure.

These models, in order to be valuable in identification, etc., must in the first place be accurate, and secondarily, must have been approved by some agency of the Department to make them authoritative.

This is in keeping with the care exercised by the General Government in the accuracy of weights and measures by providing each State with a complete set of standards.

RECOMMENDATIONS.

For the fiscal year 1897-98 it is strongly urged that provision be made on the statutory roll of this division for an additional pomological clerk at a salary of $1,200 per annum, and that the appropriation for pomological information be increased from $6,000 to $8,000, an increase of $2,000.

These increases are needed to insure the completion of important investigations already begun, the completion of which is delayed by an insufficient office force and the necessity for exercising too close an economy in field investigations.

REPORT OF THE STATISTICIAN.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF STATISTICS,
Washington, D. C., September 10, 1896.

SIR: I have the honor to transmit herewith my report for the fiscal year ending June 30, 1896.

Respectfully, HENRY A. ROBINSON,
Statistician.

Hon. J. STERLING MORTON,
Secretary.

WORK OF THE YEAR.

The method of crop reporting, in use for many years, by means of correspondents who endeavor to establish averages for a county, has been continued during the year, supplemented, as elsewhere stated, by the system in charge of State agents and by the township correspondents.

IMPROVED METHODS OF OBTAINING STATISTICS, ETC.

With these three means of ascertaining various facts with regard to crops—such as area, amount of product, value, present condition, etc.—it is confidently asserted that in the breadth of its statistical basis the opportunities for accurate crop reporting by this division have been, during the past year, superior to those in any similar work heretofore done in this or any other country.

With county correspondents varying from 9,000 to 10,000 in number, with State statistical agents and their assistants numbering from 6,000 to 7,000, and with a corps of township correspondents having about 28,000 members, each group working independently of the others, the Department has at its service the amplest resources it has ever yet commanded.

Besides the force of more than 40,000 regular correspondents above mentioned, the office has an important auxiliary force in some 15,000 millers, grain dealers, and elevator owners, and 123,000 selected farmers, from whom for special purposes reports are received. With this corps of about 180,000 regular and occasional correspondents, it is possible to do a large amount of valuable and original statistical work, as elsewhere suggested, concerning agriculture and related subjects.

By means of these correspondents there have been obtained during the year numerous reports regarding the per capita consumption of wheat throughout the United States, which may be expected to contribute important information on this controverted subject.

By the aid of this large corps of correspondents, this office has brought down to the present year the statistics of the wages of farm labor, which were first collected for the year 1866, and which, covering the last thirty years, constitute the only statistics of the wages of farm labor representing the United States and the most complete statistics of the kind available.

A large and wide distribution has been given to the reports of this division. During the past year 2,000,000 copies of the Monthly Crop Report have been sent to crop correspondents and various applicants, and 480,000 reports of the Department and of its other divisions have also been sent to crop correspondents as a recognition of their services generously, because freely, contributed to the work of statistical inquiry of the Department. For the preparation of the reports of the Division of Statistics it has been necessary to send out 1,555,400 regular and special circulars, with blanks for returns.

TOWNSHIP ORGANIZATION.

The work of organizing a corps of correspondents, including at least one in each township, district, or other minor civil division, which was begun during the previous year, has been practically completed during the period covered by this report.

Nearly thirty thousand faithful and efficient correspondents now make returns from these more restricted districts, and the results secured by their use are believed to contribute largely to the increasing accuracy of the final estimates. The demand upon the clerical force of this division by reason of the increasing labor required for the tabulation of so many additional returns has been exceedingly great, but it is gratifying to record that it has been met with a display of energy, application, and industry that is highly satisfactory. No amount of diligence in the performance of duties will, however, make up for actual deficiency of numbers, and it is greatly to be regretted that the force available for this work is altogether too small to permit of the utilization of the new corps of correspondents as fully as is desirable. The system of securing reports from smaller communities permits of greater accuracy in the returns from which this office must draw its conclusions, and would also permit the investigation of many subjects of importance to the agricultural industry which could not be successfully undertaken with the old organization. Whenever sufficient provision is made for the clerical work necessarily incident thereto, many very valuable results can be secured through this new source of information.

TRANSPORTATION STATISTICS.

The increasing demands upon the clerical force of this division growing out of the extension of the system of crop reporting and the multiplication of correspondents having made it necessary to restrict the time devoted to the investigation of the methods and cost of transporting agricultural products, it has been considered advisable to separate the publication of freight rates and related data from the regular monthly reports and publish them at less frequent intervals in separate bulletins.

The initial bulletin upon the new plan deals with the railway charges for moving the domestic product of raw wool, and will be followed by others treating of special phases of the transportation of farm products.

COLLECTION OF COTTON STATISTICS, 1895-96.

The plan for collecting the statistics of the cotton crop, which was adopted September 1, 1894, was again followed during the crop season just past, only it was enlarged in its scope, and, it is believed, was improved upon in some of its minor details.

As was set forth in the Statistician's report of last year, the statistics of the crop of 1894-95 were based—

First. Upon the statements of all railroads and water transportation companies shipping cotton to points beyond the State in which it originated, all ports in the cotton States being treated as points beyond the State.

Second. Upon the statements of the cotton and woolen mills, located in the cotton States, as to the amount of raw cotton they had purchased for consumption.

Third. Upon the reports of county correspondents as to the amount of cotton remaining on hand April 1, 1895, on plantations and at interior towns; and

Fourth. Upon the reports of special agents located at the principal ports in the cotton States, who separated the receipts at their ports, giving each State credit for its own production.

That being the first attempt at collecting cotton-crop statistics by this plan, it was believed that comparatively accurate statistics of the crop of each State could be obtained by following up the commercial movement during six months of the year and on a given date take a stock of what remained on hand. The commercial movement was therefore followed up from September 1, 1894, to April 1, 1895 (the mill purchases being included with the commercial movement), and on April 1, through the aid of county correspondents, an account was taken of what then remained on hand at interior towns and on plantations. By this method the estimate of the total cotton crop amounted to 9,476,435 bales. At the close of the commercial year—August 31, 1895—it was found that the estimate of this crop put forth by the leading cotton exchanges was 9,892,766, or 416,331 bales greater than the Department's estimate.

It is claimed by the commercial people who make up these estimates that their figures are as nearly accurate as it is possible to make them, as they follow the movement of every bale of cotton "from the plantation to the mill" during the entire year, beginning with September 1 and ending with August 31. They may safely lay claim to accuracy for their estimates, as there are only two of them—the New Orleans Cotton Exchange and the New York Commercial and Financial Chronicle—undertaking this work, and they get their statistics from the same sources and the same agents, and have never had a rival in the collection of cotton-crop statistics until this Department entered upon the work September 1, 1894. The two authorities above mentioned always practically agree in their estimates. But there is nothing remarkable in this, as their statistics are derived from almost precisely the same sources and from the same organized corps of commercial agents.

When the present plan of this Department was adopted it was well understood that that feature of it relating to the collection of statistics through county correspondents, showing the amount of cotton remaining on hand at any given date, was one of doubt and uncertainty. It was certain that the Department could depend upon obtaining just as accurate statistics of the movement of the crop and the mill purchases as could the New Orleans Cotton Exchange or the Financial Chronicle, but that county correspondents in nearly 900 counties should, without compensation, voluntarily furnish accurate information was not to be expected. This method of estimating the crop was intended only to be preliminary, or an approximate forecast of the crop, to aid the producer in his planting operations for the coming year. And yet, with the aid of its corps of voluntary correspondents, the difference in the Department's estimate and the commercial estimate in the tremendous crop of 1894–95 amounted to only 416,331 bales, the commercial estimate being only 4.4 per cent in excess of that of the Department.

Especial attention is invited to the fact that the only investigations in regard to the cotton crops of particular States, other than that of the Department of Agriculture, were made by O. S. Young and H. G. Hester, secretaries of the cotton exchanges of Galveston and New Orleans, respectively; and these covered only the crops of Texas, Indian Territory, and Oklahoma. In the following statement the results reached by these investigators are presented in comparison with those arrived at by the Department of Agriculture:

States and Territories.	Department's estimate.	O. S. Young's estimate.	H. G. Hester's estimate.
	Bales.	*Bales.*	*Bales.*
Texas	3,073,821	3,114,826	
Indian Territory	104,887	104,467 (Indian Territory and Oklahoma)	
Oklahoma	13,001		
Total	3,191,709	3,219,293	3,276,000

It is believed that the Department had much better facilities for obtaining these statistics than either of the above authorities, and that much of the excess shown by their figures can be traced to duplications. The difference between the results is, however, very small when we consider the magnitude of the totals.

To test the accuracy of the Department's method and to ascertain how far the county correspondents were out of the way in their estimates of the amount of cotton remaining on hand at interior towns and on plantations on February 1, 1896 (the date upon which the preliminary estimate of the crop of 1895–96 was made), it was decided to follow up the commercial movement of the crop during the entire year, and to that end the Department's special agents at the ports were continued in service at reduced salaries, and an additional agent was appointed at Shreveport, La., where it was found that a large amount of cotton was concentrated from several States, and from thence distributed to the ports and inland mills and markets.

Two notable changes have been made during the present year, one of them relating to the reports of the transportation agents, and the other to those of the county correspondents. Formerly only those railroads running beyond the State boundaries were asked to furnish statements of the movement of cotton to points out of the State in which it originated. It was feared that some cotton might not have

been counted that originated on the smaller lines within the States. They are now added to the list, so that almost without exception every railroad on whose lines cotton is grown makes a report of the amount of cotton it handles monthly.

It was believed that greater accuracy would result from increasing the corps of county correspondents. With this view an effort was made to obtain a correspondent in every township or precinct in every cotton-growing county, so that the number in this service was increased from about 3,500 in 1894–95 to over 10,000 in 1895–96.

As the statistics for the year have not been compiled, and can not be until after the middle of September, it is impossible to tell what advantages have been derived from the changes above referred to. It is certain, however, that the railway service, with one exception, has been greatly improved. The exception referred to relates to the Southern Railway. Since the beginning of this work that road has undergone so many changes in the management of its various divisions, new lines being added to the system from time to time, that it has been almost impossible to get any satisfactory statistics from it. It is one of the largest of the Southern railway lines, and handles a very large quantity of cotton. The failure of this line to furnish complete statistics in January last caused considerable embarrassment. But the officials have promised the Department a full and revised statement of the cotton movement over their lines in time for the annual report in September. With the exception of this road, the railway reports have, as above stated, been complete and satisfactory, and this branch of the investigation has been greatly improved.

The cotton mills have come to appreciate the importance of furnishing statistics to the Department, and they generally respond with commendable promptness to the requests for the purchases of raw cotton made by them during the season. This branch of the work has also been improved through a most thorough investigation as to the number of new mills that have gone into operation since 1894, with the result that the list has been considerably increased during the past twelve months.

The Department has an excellent corps of special agents located at the ports and in a few interior towns, who have given satisfactory service in the collection of these statistics. Indeed, there is only one feature of this cotton work that may be considered defective or that could be materially improved upon, namely, that of taking stock of the cotton remaining on hand at interior towns and on plantations at a given date. It is impossible to expect accuracy in this branch of the work when the service performed is purely voluntary. Experience has shown, however, that by the expenditure of a few thousand dollars—an insignificant sum when the results that might be obtained are considered—this service could be made as trustworthy as any other connected with the work. It is therefore respectfully, but most earnestly, recommended that the Statistician be authorized to expend $25,000 to improve this branch of the cotton work. If his recommendation is approved, he feels convinced that by the end of the coming season the Department's method of collecting statistics of the cotton crop will have been so perfected that nothing short of a census could be suggested or recommended as a substitute for it. Indeed, the plan has some advantages over the census plan, especially in cheapness, and until the census plan is adopted it may rightfully lay claim to being the most perfect plan yet devised for ascertaining the cotton production of each State and Territory.

PRICE STATISTICS.

A record of the wholesale prices of the principal agricultural products in nearly fifty of the leading cities of the United States and Canada is regularly kept in this office, and often proves useful in answering inquiries. This is made possible by the courtesy of the secretaries of the boards of trade and other commercial bodies, to whom blank schedules are sent monthly, with a circular letter requesting a return of the prices prevailing on the 1st day of the month. The desired information is nearly always given promptly and cheerfully. In some cases the regular publication of prices by a commercial organization makes the filling in of the schedules unnecessary. The figures received are transcribed at intervals into a book kept for that purpose.

LIBRARY.

The division is gradually collecting a valuable statistical library. A large number of official publications are received through exchange with the statistical bureaus of all the more important foreign countries, as well as those of the United States and the State governments. A number of agricultural, commercial, and unofficial statistical periodicals are also regularly received. The cataloguing of the library and the binding of such publications as require it are being carried on under the auspices of the librarian of the Department, and it is hoped that the entire collection will soon be so arranged as to be much more easily accessible and hence more valuable than heretofore. Its value might be still further increased by the indexing of important articles in the periodicals; but with the present office force it has been found impossible to do this, and the work of indexing has therefore been confined to some of the French publications.

ANSWERS TO INQUIRIES

The demands for statistical information by legislative and administrative officials of the United States and foreign Governments, industrial and commercial organizations, and private individuals, although legitimate and cheerfully complied with as far as practicable, consume a large proportion of the time of the experts of the office. Considerable research, often including the examination of official publications in several languages, is frequently necessitated, in addition to the labor of compilation and that of reducing statements in foreign weights and measures to their American equivalents.

Regret, however, is only felt for the inability to fully meet the demands of a correspondence so voluminous.

A special report, giving in a concise form all the trustworthy data in regard to farm animals and their products, collected from time to time by this office, has recently been published, and two other reports, giving similar information in regard to farm products, are in course of preparation. These, when completed, will materially facilitate the labor of answering inquiries.

CORRESPONDENCE.

During the year 2,440 letters, comprising the most important of those sent out over the signature of the Statistician, were entered upon

the record book, and 5,916 were press-copied. The large mailing lists have been kept in good condition; erasures, additions, and changes having been promptly made. This work requires the constant attention of one competent person.

A large increase in incoming circular mail, due to extension of the corps of township correspondents, took place during the year. The number of pieces received from October 1, 1895, to June 30, 1896, by actual count, was 180,123, and could not have been much under 210,000 for the entire year. Most of this mail is received a few days before the time of each report, and has to be opened quickly and scrutinized carefully. This additional work has fallen mainly upon the section of correspondence.

INQUIRIES SUGGESTED.

MISCELLANEOUS INVESTIGATIONS.

Among the many other investigations that might be conducted by this division, if means were available, are agricultural labor and proprietorship, the net earnings of the farmer, questions pertaining to farming in the South, particularly in the cotton country, and especially with reference to the self-providing independence of the farmer. From time to time it will be desirable to continue the publication of statistics of the rates of farm wages and of the world's production of wheat and other crops. It might be worth while also to ascertain how much of domestic manufacturing is now left on the farm, or to what extent that which used to be manufactured at home has now been transferred to the factory. Reports of the quantities and movement of the products of truck gardening would be worth a timely publication, as also would the production of cotton-seed oil and meal and the products of vineyards and wineries.

COMMERCIAL MOVEMENT.

The boards of trade, produce exchanges, and other commercial organizations located in the cities most interested in the grain trade, as well as many newspapers and trade publications, secure more or less complete reports from railways and other transportation companies showing receipts and shipments of the principal cereals at their more important markets and shipping points. It is not believed, however, that in any case all the important and useful data that might practicably be collected from these sources are available or utilized, or that the published results receive the credit for authenticity, accuracy, and impartiality which would result if they emanated from this Department. A thorough and complete organization of this source of information would contribute additional statistics of great value to those interested in the production of these crops, and the prestige of the Department would enable it to secure more complete and satisfactory returns than can be obtained in response to inquiries coming from any other source. The labor incident to this undertaking, while considerable, could be performed during the intervals when the office is not engaged in the tabulation of returns from crop correspondents, and any increase of the clerical force sufficient to the requirements of the crop-reporting system, as now organized, would also enable it to add this inquiry to the number of its regular investigations.

AGRICULTURAL CENSUS.

The subject of an agricultural census, taken once a year or at intervals of two or three years, has been discussed in former reports of the Statistician, and it is unnecessary to repeat the considerations there advanced in its behalf. These considerations, however, retain their full force, and it is deemed proper, in closing this report, again to call attention to the importance of this subject.

EXPENSES FOR THE NEXT FISCAL YEAR.

For the fiscal year ending June 30, 1896, the appropriation made by Congress for meeting the expenses of this division amounted to $35,160 for classified salaries and $100,000 for general use outside of the needs of the Section of Foreign Markets. These amounts will be fully needed to carry on the intended work of the year, and at this time it seems quite probable that they will not be sufficient.

The enlargement of the crop-reporting service as a result of the conference mentioned in last year's report is an expensive undertaking, and on that account has not yet been fully and satisfactorily carried out.

In the endeavor to do this, to prepare special and occasional reports such as those heretofore ranked among the more valuable ones issued by this division, and particularly to meet the probable cost of fuller instruction of statistical correspondents and closer scrutiny of their work, as well as that of the investigation into agricultural earnings and that of the other investigations here recommended, an increase of expense should be anticipated. In view of this prospect it is respectfully recommended that the amount requested for classified clerks may be raised to $50,000 and the amount for miscellaneous purposes to $110,000, not including the expenses for work on foreign markets.

To improve the plan now in operation for collecting cotton crop statistics, an appropriation of $25,000 is recommended. It is believed that this sum would not only perfect this service but could also be utilized for collecting data relating to the sugar and rice crops, subjects upon which this office has hitherto been unable to make estimates satisfactory to itself or suitable to meet the numerous demands made upon it for statistics of these important products. Since both crops are grown in the cotton States, the same agencies employed for collecting more complete cotton statistics would be available for obtaining comparatively full and accurate statistics of sugar and rice production.

REPORT OF THE DIRECTOR OF THE OFFICE OF EXPERIMENT STATIONS.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF EXPERIMENT STATIONS,
Washington, D. C., September 10, 1896.

SIR: I have the honor to present herewith the report of the Office of Experiment Stations for the fiscal year ending June 30, 1896.

Respectfully,

A. C. TRUE,
Director.

Hon. J. STERLING MORTON,
Secretary.

SUPERVISION OF EXPENDITURES OF EXPERIMENT STATIONS.

In accordance with the policy announced in the report for 1895, visitation of the agricultural experiment stations for the examination of their work and expenditures, with special reference to the fiscal year ending June 30, 1895, was continued under the authority conferred upon the Secretary of Agriculture by Congress until all the stations except those in California and Nevada had been thus visited prior to the preparation of a report of this investigation for transmission to Congress as required by law. Owing to the fact that the law did not require the stations to render their financial reports for the preceding fiscal year until February 1, 1896, it was not practicable to complete the report until after that time. The following statements from that report may serve to indicate its scope and nature and also the general results of the investigation regarding the management and expenditures of the stations:

In carrying out the injunctions of Congress in this matter it was determined to base the report to be made under this act on three different sources of information, the financial reports rendered by the stations on the forms prescribed by the Secretary of Agriculture, the publications of the stations, and the data collected by agents of the Department through visits to the stations and conferences with station officers. As soon as practicable after the passage of the act the financial schedules were prepared and transmitted to the stations, together with forms for the tabulation of their accounts in accordance with the schedules. As the act was not passed until after the beginning of the fiscal year which it was intended to cover, the plans of the stations regarding the expenditure of the funds for that year were already made in large measure and the methods of bookkeeping fixed without reference to the schedule afterwards received from the Department. Moreover, inasmuch as the report in accordance with this schedule did not have to be made until after the close of the fiscal year, the full effect of the requirements of the schedule as related to the methods of keeping accounts was not understood by all station accountants. As there had previously been, in the judgment

of the authorities of some of the stations, no sufficient reason for keeping the account of the funds received from the United States for experiment station purposes strictly separate from that of other funds received for experimental or educational purposes by the institutions enjoying the benefits of the act of Congress of March 2, 1887 (known as the Hatch Act), methods of bookkeeping had in a number of cases been adopted which made it impracticable to determine with exactness the disposition of the funds given under that act. In fact, the necessity for such a clear division did not appear in the case of a few stations until the agents of the Department had made a personal examination into their methods of expenditure and accounting. Some of the financial reports of the stations for the fiscal year covered by this report are therefore based on estimates or on vouchers selected after the close of the year as containing appropriate items to be included in the account of the Hatch fund. It is believed, however, that all the stations now appreciate the necessity for keeping a strict and separate account with this fund and that it will be possible hereafter to secure an exact report of the expenditures made from it.

In order that the conditions existing at the several stations and the objects for which the funds granted to them by Congress are being expended may be clearly understood, it has been thought proper in this first report, marking an important change of policy on the part of the United States Government in its financial transactions with the stations, to make brief general statements regarding their history, organization, methods of transacting business, revenues, lines of work, and the results of their more important enterprises, as well as to indicate the nature of the publications issued by them during the period covered by the report.

In considering the operations of the stations under the act of Congress of March 2, 1887 (Hatch Act), and the ways in which the moneys granted to the several States and Territories for agricultural experiment stations have been expended, it is necessary to have in mind at least an outline of the history of experiment stations in this country. Investigations in agriculture, almost exclusively field experiments, were begun almost as soon as the first agricultural college was established in Michigan in 1855. And after the passage of the act of Congress of July 2, 1862, as agricultural colleges multiplied rapidly, agricultural experiments increased in number in different parts of the country. These were carried on by instructors in these colleges with small funds and largely as voluntary labor in addition to their regular duties. Meanwhile the influence of the experimental inquiries conducted in a more systematic manner in Europe began to be more and more felt in this country, and finally a beginning of regularly organized experiment stations was made in 1875 in Connecticut as a separate State institution, and about the same time in California in connection with an agricultural college. Within the next twelve years stations were established in 14 States, some being separate institutions, as in Connecticut, and others being more or less distinct branches of agricultural colleges, as in California. The funds controlled by these stations were small and a large share of their work consisted of routine analyses of fertilizers and the simpler field experiments. Some more thorough and original work was done and at least the foundations laid for the wider development of agricultural research. In 1887 Congress passed the Hatch Act, which not only materially increased the resources of the stations already established and broadly enlarged the scope of the operations which they might undertake, but also caused the rapid establishment of stations in the 34 States and Territories where none previously existed. One result of this rapid expansion of agricultural research was a large demand for additional workers on the part of stations already in operation and a still larger demand for officers to man the newly established stations. The supply of trained men for such work was wholly inadequate to meet this demand, and this remains true even up to the present time. Young men in increasing numbers have turned their attention to these lines of work and the supply of candidates for station positions with proper training is growing, but many of our stations are still in the hands of men who have "grown up with the work," or who are without any considerable experience as investigators. This was an inevitable result of the policy of sudden multiplication of experiment stations adopted in the passage of the Hatch Act. It may, however, be steadily remedied year by year, and will perhaps in the end result in the establishment of methods of work and investigation especially adapted to the needs of our agriculture. It does not of itself, in my judgment, so vitally imperil the permanent success of our agricultural experiment stations as some other deficiencies of these institutions.

The Hatch Act put the control of the funds given by the United States for experiment stations entirely in the hands of State authorities, only providing that the stations should be, with some exceptions named in the act, departments of the colleges established under the act of July 2, 1862. One result of this has been that

in a number of States and Territories the funds have come under the supervision of men who have had no definite idea of the proper functions of agricultural experiment stations, or of the kind of men needed to do good work in them. Not knowing what to do, these boards of control have either attempted to copy the stations in other regions or have yielded to popular or local demands for so-called practical work. In some cases, where the colleges with which the stations are connected under the law are new institutions with limited funds, it has not been difficult to so confuse instruction with experimenting that a considerable portion of the money intended for original research has been practically diverted to general college purposes. One easy way to expend large sums of money in what to many might seem to be experimenting has been to have the station undertake the management of a large farm, on which perhaps some crops or some methods of agriculture new to the region are exhibited, but on which thousands of dollars are expended for labor and other purposes where hundreds would suffice to determine in an experimental way all that can be determined by such superficial methods. Another way is to attempt to satisfy local demands by accepting donations of farms by enterprising citizens or communities in various parts of the State or Territory, often without closely considering the nature of the land donated or the real needs of the locality, and establishing permanent substations where much money is required for buildings and other permanent improvements and where only superficial and temporary experiments are conducted. It is in the failure to understand the proper functions of the experiment station "as an organized effort of science to help the farmer" and to appreciate the necessity of thorough investigations, if results of permanent value to agriculture are to be reached, that we find the greatest weakness and the most discouraging feature of the system of agricultural research organized under the Hatch Act.

Boards of control have in a number of cases gone entirely beyond their proper jurisdiction and undertaken to manage in detail the educational and scientific institutions committed to their charge. This has produced bad results in various ways. Improper standards regarding the qualifications of station officers have been adopted. The real merits of plans of work have not been considered. The general policy, as well as the personnel of the station has shifted with changes in the membership of the board. Numerous small enterprises have been undertaken to please individuals or communities. Stations have been organized to carry on work in a number of lines of agricultural science, with the definite purpose of having "all-around stations," when it would have been far better to have concentrated the work on a few lines. Where officers are employed in both college and station, so many hours of instruction have been required of them that their station duties have been necessarily performed at odd times or during college vacations. Illiberal contracts have been made with college and station officers, regardless of the requirements of educational and scientific work. Station officers have been appointed for limited or uncertain periods, thus discouraging from the very outset the planning of thorough and far-reaching investigations. It is true, as has already been hinted, that in many ways the agricultural colleges as well as the stations have suffered severely from the same radical defects in management. Indeed, it may safely be said that the whole educational system of the United States is hampered in the same way. The idea that any intelligent citizen can manage the details of a school or college has been so deeply rooted in the popular mind that it can be eradicated only by long and persistent effort. It is encouraging to note that progress toward a better state of things has been relatively rapid in recent years. Educational affairs in our more intelligent communities are more and more intrusted to expert superintendents, college presidents, and other officers who have had special training for their work. It has become the chief business of boards of control to select the officers of the institutions committed to their charge. The determination of their policy and work, together with all the details of management, is left to expert officers. The wise board holds them responsible for the successful conduct of the institution and gives them large liberty as regards the methods by which success is sought. Freedom of action within the limits determined by the nature of their work and permanency of tenure are essential to the successful work of teachers or investigators. The experiment stations and the other departments of colleges or universities are on an equal footing as regards questions relating to the general policy of their management.

One peculiar thing resulting from ill-defined notions regarding the legitimate functions of the agricultural experiment stations has been the minimizing of their work as related to other branches of the institutions with which they are connected. Too often the experiment station work has been considered of so little relative importance that instead of giving the station a definite organization as a department of the college, its work has been distributed in small pieces among

other departments. The professors have been given small additions to their salaries and a little investigation in agricultural lines has been added to their other duties. This would seem to show a strange misconception of the intent of the Hatch Act and a singular lack of appreciation of the value of the opportunity for original research afforded the institutions on which the benefits of the Hatch Act have been conferred. Thus far very few of our institutions for higher education have had any considerable funds which could be used for original research. Such original work as has been done by the professors connected with them has been performed with small means and as voluntary labor outside of regular duties. The National Government has, however, given the land-grant colleges $15,000 each per annum for original researches in agriculture. This is equivalent to the income at 5 per cent from an endowment of $300,000 for each institution or of $14,400,000 in the aggregate. If this money could be strictly devoted to original researches in agriculture at all these institutions, as it has been in some cases, not only would practical agriculture receive vastly increased benefits but the colleges themselves would be greatly strengthened in resources and in students.

Special stress is laid upon the general matters affecting station policy and management because our investigation has shown that the chief hindrances to the success of our stations are along these lines. In a few cases there has been positively careless management of the stations and in some instances political considerations have wrought their usual havoc in these institutions. As a rule, however, there has been honesty of purpose and a desire to promote the best interests of agriculture in the management of the stations. The mistakes which have been made have been principally due to failure to regard fundamental principles on which the success of attempts to apply science to the improvement of agriculture must rest. These principles are, of course, the same for agriculture as for other arts to which science has been applied with such remarkable success during the present century.

While we deplore the mistakes which have grown out of the too sudden expansion of the experiment station movement and the misconceptions regarding their functions existing in many quarters, we nevertheless would not change the general system established by the Hatch Act. The principle of local control with a view to meeting the varied needs of different agricultural regions is in harmony with our governmental and educational system, and in the long run will undoubtedly produce the best results. The responsibility resting upon the State and Territorial authorities to maintain these stations will lead to their development in proportion to the interest taken in them by the people, and when once this interest is sufficiently awakened it will conduce to the building up of strong stations. This has already been the case in a number of States where the stations have been the longest established and most successful in their work. Already the aggregate funds annually received by the stations from other sources than the Hatch fund, largely from the State appropriations, constitute about one-fourth of their income.

The connection of the stations with educational institutions has on the whole been of great advantage to the stations. The colleges have provided them with land, buildings, and other equipment. The college officers have supplied in large measure the expert services in administration and research which have enabled the stations to attain whatever substantial and permanent results they have gained. And most important of all, the colleges have afforded to the stations that scientific backing without which their work is more than likely to be crude in conception, imperfect in execution, and disappointing in results. On the other hand, the stations have aided the colleges by supplying peculiar incentives to a higher grade of work on the part of their students with a view to preparing themselves to be original investigators, by enabling them to employ more thoroughly trained instructors, and by drawing public attention more strongly to them as sources of useful information to a large body of people outside the ranks of their students. It only remains to settle more definitely the exact relations of the stations to the other departments of the colleges and to give greater opportunity to the expert and scientific workers in these institutions to exercise their proper functions in administration, investigation, or instruction.

The permanent success of scientific institutions in this country will depend upon the support of the people rather than upon the patronage of the few, and it is believed nothing can contribute more effectually to this than the union of establishments in which science is applied to a great fundamental art like agriculture with institutions for higher education which are supported by public funds and open to the youth from all ranks of life.

Thus far we have chiefly called attention in this general statement to what we have deemed the leading defects of our experiment stations. In their favor much might be said. The educational influence which they have exerted has been of

incalculable benefit. Compelled by the law to publish bulletins at least once a quarter, they have almost of necessity undertaken the instruction of our agricultural people on nearly every topic connected with their art. Making every allowance for crudeness and imperfection in their reports, it nevertheless remains true that the amount of reliable information thus disseminated has been very great. The agricultural press has been quick to appreciate the value of the information furnished by the stations, and has spread the results of their work far beyond the limits to which it would have been carried by the station publications. The mailing lists of the stations aggregate over 500,000 addresses. During the past fiscal year this office received from the stations 350 bulletins and 55 reports. An average of 10,000 copies of each of these publications was distributed in the several States and Territories, or over 4,000,000 copies in the aggregate. Added to this there are the vast correspondence with the individual farmers and hundreds of addresses annually delivered by station officers at farmers' meetings. Even the superficial observer of our agricultural affairs can see that the spirit of improvement is already active, and that there is more and more demand that theories of agricultural practice shall be subjected to the test of investigation by experts.

The stations have secured the confidence and respect of practical men to a remarkable extent. Where they have done their most thorough scientific work they have secured the greatest financial support. They have already produced important changes in agricultural practice. The fertilizer business has been largely revolutionized through their efforts. The dairy industry is rapidly shifting to the basis of quality of product established by the stations. The results of feeding experiments made at the stations are being largely taken as the basis on which changes in the methods of feeding different kinds of animals are made to conform to the conditions existing in different regions. Much has been done to aid the farmer in his contest with insect pests and diseases of plants and animals. Immigrants in many instances have been shown how to avoid costly mistakes. The causes of soil exhaustion and the means of reclaiming land hitherto deemed worthless for agriculture have been pointed out. Improved varieties of horticultural and agricultural plants have been introduced in many localities. Diversification of agriculture in many States is proceeding on lines laid down by the stations.

As a result of the closer relations which have been established between this Department and the stations, this office has already obtained a large amount of information regarding them which will be of very great service in its work. New ways have been indicated in which the Department may help the stations and in which they in turn may aid the Department in various lines. The agents of the Department have everywhere been cordially received by officers of the stations and every opportunity has been afforded them to obtain a correct view of the condition and outlook of the stations. Personal acquaintance with the men in charge of the stations and with their environment will undoubtedly contribute in various ways to a more complete and just knowledge of the real merits of the work undertaken by the stations and of the hindrances to the complete success of their enterprises. It is believed that in no way can this Department more effectually carry out that provision of the Hatch Act which enjoins upon it the duty of furnishing "such advice and assistance as will best promote the purpose of this act" than by cultivating close personal relations with station officers and seeking to obtain an intimate knowledge of the conditions under which their work is performed.

In connection with the investigation of the work and expenditures of the experiment stations during the past year, a number of general questions respecting the interpretation of the Hatch Act have arisen under conditions which have made it necessary for the Department to declare its position regarding them. The views of the Department on these points have, therefore, been formulated and published for the information of the stations. (See Circular 29 of the Office of Experiment Stations, appended to this report.)

It will be seen from the above statements that the results of the investigation of the affairs of the stations fully justified the recommendations for supervision of the expenditures of the stations by officers of the United States made in the Report of the Secretary of Agriculture for 1893 (p. 8). The desirability of such supervision is now generally recognized by the governing boards and officers of the stations, and the efforts of the Department to define the proper limits of expenditures under the act of Congress of March 2, 1887, and to secure greater uniformity in the general management of the stations have been cordially welcomed. Already in a number of instances changes

have been made in station policy and management which have resulted in a more economical system of expenditure and in securing a more direct application of the national funds to the purposes for which they were intended under the law establishing the stations. It is believed that the more intimate relations of the Department with the stations, while not interfering in any way with their local autonomy as regards the planning and conduct of their legitimate work, will enable them to secure greater benefits for the agriculture of their respective localities and of the country at large, will strengthen their position as regards the confidence of the farmers in whose interests their work is prosecuted, and will secure more speedy and thorough dissemination of useful results.

Congress having continued the provision for the supervision of expenditures of the experiment stations, schedules for their financial reports have again been prescribed by the Secretary of Agriculture and forwarded to the stations. The visitation of the stations with reference to the work and expenditures of the past fiscal year is now in progress, and the report to Congress will be prepared as soon as practicable.

EXPERIMENT STATIONS IN ALASKA.

In the report of the director of this office for 1892 the suggestion was made that consideration should be given to the question of the advisability of establishing an agricultural experiment station in Alaska. Since that time various propositions with reference to the establishment of one or more experiment stations in that Territory have been brought forward in Congress. In my judgment the conditions at present existing in Alaska and our limited information regarding the agricultural resources and capabilities of that Territory do not warrant the establishment of an agricultural experiment station there on the plan pursued in other parts of the United States. There is, however, need of an investigation of the agricultural outlook of this region, especially in view of the development of the mining industry there and the decreasing food supply available to the native population owing to changes in the seal fisheries and other pursuits by which they have hitherto gained a somewhat precarious livelihood. I would therefore suggest that Congress be asked to make a moderate appropriation to enable the Secretary of Agriculture to investigate and report to Congress upon the agricultural resources and capabilities of Alaska, with special reference to the desirability and feasibility of the establishment of agricultural experiment stations in said Territory and the selection of suitable locations for such stations.

PUBLICATIONS OF THE OFFICE.

During the year the office issued 27 documents, aggregating 1,630 pages. These include 12 numbers of the Experiment Station Record with detailed index, 6 bulletins, 6 farmers' bulletins, and 3 circulars. In addition, the report to Congress on the work and expenditures of the stations and the bulletins prepared in manuscript but not yet printed will aggregate about 900 printed pages. Several articles for the Yearbook of the Department were obtained from officers of agricultural colleges and experiment stations through this office.

The seventh volume of the Experiment Station Record comprises 1,102 pages, and contains abstracts of 304 bulletins and 46 annual reports of 54 experiment stations in the United States, 83 publications

of the Department of Agriculture, and 443 reports of foreign investigations. The total number of pages in these publications is 25,281. The total number of articles abstracted is 1,301, classified as follows: Physics, 1; chemistry, 144; botany, 43; fermentation and bacteriology, 4; zoology, 10; meteorolgy, 54; air, water, and soils, 54; fertilizers, 100; field crops, 206; horticulture, 111; forestry, 11; seeds and weeds, 41; diseases of plants, 64; entomology, 87; foods and animal production, 156; veterinary science, 36; dairying, 75; technology, 7; agricultural engineering, 18; statistics, 77. Classified lists of articles, in some cases with brief abstracts, are also given in each number. The aggregate number of titles thus reported is 3,256. More strict condensation of matter has been made in this volume than ever before. On the other hand a larger number of articles have been reviewed, the total number in this volume being 4,557, as compared with 3,747 in the previous volume.

Special articles were also published in the Record as follows: "The Darmstadt Experiment Station," and the "Wagner method of pot culture," by J. B. Lindsey, Ph. D., of the Massachusetts Hatch Agricultural Experiment Station; "The principles and methods of breeding cultivated plants," by Prof. G. Liebscher, director of the Agricultural Institute at Göttingen, Germany; "Suggestions for investigations in vegetable physiology, with special relation to agriculture," by Dr. George Lincoln Goodale, Fisher professor of natural history and director of the botanic garden, Harvard University; "The metabolism of nutrients in the animal body and the source of muscular energy," by Prof. N. Zuntz, of the Royal Agricultural High School, Berlin; "Farmers' institutes," by A. C. True and F. H. Hall, of this office; "The pathology of plants: Lines of investigation that might be undertaken by experiment stations," by B. T. Galloway, chief of the Division of Vegetable Physiology and Pathology of this Department; "The excretion of metabolized nitrogen by animals," by C. F. Langworthy, of this office; "Nitrogen assimilation in its application to practical agriculture," prepared in this office.

There are condensed accounts of the proceedings of the twelfth annual convention of the Association of Official Agricultural Chemists and of the ninth annual convention of the Association of American Agricultural Colleges and Experiment Stations. The volume also contains a number of editorials on topics deemed of special interest to investigators in agricultural science, and under the head of "Notes" facts regarding the current work of the stations, changes in their working corps, additions to their equipment, new legislation affecting their work, etc.

The plan of publishing in the Record accounts of methods of analysis prepared by the abstract committee of the Association of Official Agricultural Chemists has been continued. The assistant director of this office has acted as chairman of that committee, and it has thus been made possible to more thoroughly organize this branch of the work.

A change of quarters which brings the office into close connection with the Library of the Department in the main building, has made it possible to more thoroughly systematize the work of examination of the literature of agricultural science throughout the world, and the review of this literature in the seventh volume of the Record is much more complete than in any preceding volume. The cordial cooperation of the librarian of the Department in the work of the office in this direction is gratefully acknowledged.

The edition of the Record has been materially reduced by taking off

from the mailing list the addresses of the crop correspondents of the Division of Statistics, and will be further reduced hereafter by the elimination of a considerable number of addresses of individuals who have hitherto received the Record for the sake of the practical information which it contained, but which is now to a very large extent more economically supplied through other publications of the Department. On the other hand, the Record is now sent to a larger number of investigators and students in agricultural science and to the libraries of numerous educational and scientific institutions. The number of foreign addresses on the mailing list has also been increased, and as a result a much larger amount of printed and other information regarding investigations in agricultural science in foreign countries has been obtained. It is believed that the policy now pursued regarding the publication and circulation of the Record will result in providing our students and investigators in agricultural science with prompt and complete information regarding work in this line throughout the world, and that the practical results of such investigations wherever made will be readily transmitted to our farmers through the popular publications of this Department and the agricultural press. The value of such a review of the literature of agricultural science in stimulating more thorough investigations and preventing the duplication of work already accomplished is more clearly recognized as the scope and variety of investigations for the benefit of agriculture steadily increase from year to year.

Dairy Bacteriology (Bulletin No. 25), by H. W. Conn, Ph. D., professor of biology in Wesleyan University, gives a review of the present status of our knowledge of dairy bacteriology and its application with special reference to the investigations in this line published during the three years intervening since the publication of Bulletin No. 9 of this office, on the Fermentations of Milk, by the same author.

Agricultural Experiment Stations: Their Objects and Work (Bulletin No. 26), by A. C. True, director of this office, contains brief statements regarding the objects, history, organization, and work of the experiment stations, and was prepared especially for distribution in connection with the exhibit of the office at the Atlanta Exposition.

Organization Lists of Agricultural Experiment Stations and Institutions with Courses in Agriculture in the United States (Bulletin No. 27) contains a list of experiment stations in the United States, with their governing boards and working staffs; a list of agricultural schools and colleges in the United States, with courses of study and boards of instruction; a list of officers of the Association of American Agricultural Colleges and Experiment Stations and of the Association of Official Agricultural Chemists of the United States, a list of station publications received at this office during 1895, Federal legislation affecting agricultural colleges and experiment stations, and regulations and rulings of the Post-Office and Treasury Departments affecting the stations.

The proceedings of the ninth annual convention of the Association of American Agricultural Colleges and Experiment Stations, held at Denver, Colo., July 16–18, 1895 (Bulletin No. 30), contains, in addition to the proceedings of the convention, papers, addresses, and reports on a number of subjects of interest to students and investigators in agricultural science.

Silos and Silage (Farmers' Bulletin No. 32), by Charles S. Plumb, professor of animal industry and dairying in Purdue University and director of the Indiana Experiment Station, contains practical

information regarding the construction, cost, and use of silos; the selection and culture of silage crops; the cost, composition, and feeding value of silage; and the results of experiments in feeding silage to farm stock.

Potato Culture (Farmers' Bulletin No. 35), by J. F. Duggar, of this office, is a résumé of practical information on this subject, with special reference to results of experiments regarding the amount and size of seed.

Cotton Seed and its Products (Farmers' Bulletin No. 36) was prepared in this office on the basis of articles on this subject furnished by members of the office force and others for a more complete treatise on the cotton plant and its uses, and was intended to show the importance of the cotton-seed industry and to indicate ways in which it might be extended.

Kafir Corn: Characteristics, Culture, and Uses (Farmers' Bulletin No. 37), by C. C. Georgeson, professor of agriculture in Kansas State Agricultural College, was prepared to give practical information regarding this crop, which has recently come into prominence as peculiarly adapted to the semiarid portions of the United States, where Indian corn frequently fails.

Onion Culture (Farmers' Bulletin No. 39), by R. L. Watts, instructor in horticulture at the University of Tennessee and horticulturist of the Tennessee Agricultural Experiment Station, contains a useful summary of information regarding methods of culture of this important crop, based upon the work of the various agricultural experiment stations and upon the experience of extensive and successful onion growers in all parts of the United States.

A brief statement regarding other publications, issued in connection with work in nutrition investigations, may be found on pages 138 and 139.

A summary of experiments with copper sulphate to prevent the attacks of fungi on cultivated plants and the effect of this treatment on the germination of seed, together with an account of some original experiments in the same line having been prepared by Walter H. Evans, of this office, outside of time devoted to official duties, was accepted by the chief of the Division of Vegetable Physiology and Pathology and published as Bulletin No. 10 of that division.

A comprehensive bulletin on the History, Cultivation, Uses, and Enemies of the Cotton Plant is now in press. In the preparation of this bulletin this office has had the cooperation of the Divisions of Entomology and Soils, and of officers of agricultural colleges and experiment stations, and of other experts.

A compilation of the results of investigations on the metabolism of men and domestic animals, begun in connection with the work in nutrition investigations, has been continued as a part of the work of the office in the past year and is now nearing completion. A large amount of material has been collated from widely scattered sources, and the work of reducing the data to comparable form has been very arduous. It is believed, however, that such a condensed and complete summary of investigations on this fundamental subject will be of great service in agricultural investigations relating to the feeding of domestic animals, as well as in studies on the nutrition and on the diseases of man.

A bulletin on the varieties of Indian corn has been completed, and much work in compiling results of investigations on the chemistry and on the physiological botany of the corn plant has been done during the year.

Farmers' Bulletins on "Fowls: Care and feeding," "Commercial fertilizers," "Sheep raising," and "Irrigation in humid regions" have been completed, and the preparation of other bulletins for this series is in progress.

Accounts of experiments in irrigation in the humid regions of the United States, made under the direction of experiment station officers, have been received, together with articles by eminent foreign specialists on topics vitally connected with the work of experiment stations in this country. Arrangements have been completed for other articles of a similar character, and the cordial cooperation of foreign workers in many lines of agricultural science is assured. Near the close of the year leave of absence was granted the director of the office to visit institutions for agricultural education and research in England and on the Continent, with the special object of bringing the work of the office into closer touch with such institutions abroad in order that the results of their work might be more completely and speedily brought to the attention of our investigators and students.

CARD INDEXES.

Copy for about 2,500 cards of the Index of Experiment Station Literature has been furnished the printer during the year. The number of index cards distributed has reached 11,000. The index is now very nearly up to the point where it will follow current issues of experiment station publications as closely as it is practicable to do in view of the irregularity with which these publications are issued, and consequently the value and usefulness of the index are greatly increased. The receipts from sales of this index during the past year have been $191.75. Work on the card index of articles by station workers in other than station publications and on indexes of foreign publications has been continued. An index of the new varieties of cultivated plants introduced by horticulturists during 1894 and 1895 has been prepared with the cooperation of the Division of Pomology, and it is proposed to continue this index from year to year.

BIBLIOGRAPHICAL WORK.

During the past year the office has been brought into closer relations with the library of the Department, having had its quarters transferred to rooms in the immediate proximity of the library. The library collected by the office has been incorporated with that of the Department. The office retains in its immediate charge only such publications of the agricultural colleges and experiment stations as are in the nature of records of their work. The office has continued its efforts to secure exchanges of foreign publications containing reports of agricultural investigations and has increased the number of such exchanges during the past year. Duplicates of station publications have been sent to stations and station officers desiring to complete their files. Five hundred and forty-one numbers of periodicals received by the office have been transmitted to the Department library, and the receipt in the library of 3,261 numbers of periodicals has been brought to the attention of the editorial force engaged in the preparation of the Experiment Station Record. Work has been continued on the list of works on agricultural subjects, issued by different publishers, and it is hoped before long to make this list available for the use of investigators, teachers, and students.

DISTRIBUTION OF PUBLICATIONS.

The supervision of the distribution of publications of the Department to experiment stations and educational institutions having been assigned to this office, the lists furnished by the different divisions were classified and printed in the same manner as the lists heretofore used in the distribution of publications of the office. It is believed that under the present plan duplication of distribution is avoided and that the institutions concerned receive the publications more regularly and completely. Considerable work in the distribution of publications has been made necessary by the work of the office in connection with the food investigations.

REPORTS OF THE COLLEGES HAVING COURSES IN AGRICULTURE.

The financial and statistical reports of the colleges receiving appropriations under the act of August 30, 1890, for the fiscal year ending June 30, 1896, have been deposited in this office as in previous years. *Representatives of the office have also had an opportunity to observe* the general condition of many of these institutions in connection with visits to the experiment stations united with them. It is evident that the institutions receiving the benefits of Federal appropriations for the maintenance of courses of study with special reference to the arts and industries are more and more securing the confidence and support of the communities in which they are located. Within the past few years their equipment and teaching force have been largely increased and the number of students in attendance is much greater than formerly. The facilities for education in agriculture have been greatly extended. There is at present unusual activity in the effort to improve the courses of instruction in agriculture and make them more effective for the purpose for which they are intended. Along with this attempt to perfect the college courses in agriculture, greater attention is being given to plans for more elementary instruction in this line. Special courses in dairying, horticulture, veterinary science and practice, and other agricultural branches are increasing in number. Farmers' institutes are being more thoroughly organized, and various plans of university extension in agricultural instruction are being put in operation.

ASSOCIATION OF AMERICAN AGRICULTURAL COLLEGES AND EXPERIMENT STATIONS.

The director of this office was a delegate to the ninth annual convention of this association, held at Denver, Colo., July 16-18, 1895, and was made bibliographer of the association for the current year. The Department was represented by Maj. H. E. Alvord, chief of the Dairy Division of the Bureau of Animal Industry, who was also the president of the association. This was the first meeting of the association west of the Mississippi River, and proved very successful, both as regards the numbers in attendance and the amount and character of work accomplished. The stenographic report of the proceedings was prepared under the supervision of the director of this office, and has since been edited by him and the chairman of the executive committee of the association and issued as Bulletin No. 30. The following

resolutions relating to the management of the experiment stations were adopted:

Resolved, That this association emphasizes the importance of so administering and accounting for the "Hatch" fund as to preclude any charge that it is being diverted from its sole legitimate objects, viz, agricultural experimentation and research, and the dissemination of the results thereof; and to that end heartily indorses and reaffirms such portions of the report of the committee of this association, of date October 19, 1887, as refer to this subject.

Resolved, That the association heartily indorses the suggestions contained in the address of Director True upon "Permanent elements in experiment station work," and that in particular it regards reasonable permanence in the tenure of office of the governing body and the station officers, and the preparation and careful preservation of full, systematic, and accurate records, as essential elements of successful station work.

NUTRITION INVESTIGATIONS.

The appropriation for investigations "upon the nutritive value of the various articles and commodities used for human food" was continued and increased by Congress for the past fiscal year, and the supervision of the work performed under this appropriation remained in charge of this office. The services of Prof. W. O. Atwater as special agent in charge were also retained. The general policy pursued in conducting these investigations has been the same as that outlined in my previous reports. The administrative and editorial work has been concentrated under the immediate direction of the special agent in charge, and the major part of the more purely scientific inquiries has also been carried on under his personal supervision. During the year the force needed for this service has been more thoroughly organized, and is now included in the classified service. Other inquiries have been made in representative localities, and, as stated in my last report, the effort has been made "to build up centers of inquiry, where the more scientific and fundamental problems can best be investigated, where workers in this line can be efficiently trained, where the importance and usefulness of accurate information regarding the rational nutrition of man will be impressed upon large bodies of students, and from which the practical results of food investigations may be widely and efficiently disseminated." In accordance with the terms of the law, the cooperation of the agricultural experiment stations has been sought as far as has been justified by their facilities and the requirements of their other work. Agricultural colleges and other educational institutions, as well as benevolent associations, have also joined with the Department in this enterprise. It was thought that the funds at the disposal of the Department could be most economically and efficiently used if they were devoted largely to the encouragement of researches on the food and nutrition of man in various parts of the country at institutions which would contribute the services of experts, laboratory facilities, and other resources, and in nearly every place where nutrition investigations are being conducted an arrangement of this kind has been made with the cooperating institution. By this means the assistance of institutions especially interested in this kind of research has been secured, the inquiries are most effectively carried on, and while the results are reported to the Department and disseminated by its publications throughout the country, they are also utilized to the best advantage in the places where the work is done. It is believed that in no other way could so large an amount of work have been accomplished with the money appropriated by Congress for this purpose. The data already

collected are much more numerous and extensive than could have been obtained if the Department had not enjoyed the cooperation of these institutions.

GENERAL CHARACTER OF THE INVESTIGATIONS.

The work carried on was in accordance with the plan outlined in my last report, and included the following topics:

(1) *Food supply.*—The investigations in this direction have had reference to the kinds, chemical composition, nutritive value, and cost of the food materials in most common use in different localities from Maine to New Mexico and from North Dakota to Alabama. The especial object here is to find what kinds of food materials people actually buy, the prices paid for them, the kinds and amounts of nutriment they actually contain, and the relation between nutritive value and cost. These investigations refer especially to the ordinary market supply of food and its nutritive value as compared with the price.

(2) *Food consumption.*—The purpose here is to obtain information regarding the amounts, nutritive value, and cost of the food actually bought and used by people of different occupations in different places. The subject is viewed not from the standpoint of the market, but of the household. The studies are made by going into private houses and boarding houses and weighing, measuring, and analyzing the food actually purchased and consumed. Account is taken of the number, age, sex, and occupation of the people who eat the food. Along with the weighings and analyses of the food purchased some observations are made of the materials rejected in the table and kitchen wastes. In this way data are obtained regarding the food purchased, wasted, and actually eaten. The kinds and amounts of actual nutrients are compared on the one hand with pecuniary cost and on the other hand with physiological standards. Data are thus being accumulated among families of laborers, mechanics, and professional men, among the poor of some of the larger cities, especially New York and Chicago, and among the negroes of the South. While the studies of food supply show what the markets afford and what materials provide the largest amount of nutriment at the lowest cost, the studies of food consumption show what are the actual eating habits of the people, and help to indicate how food may be more wisely and economically purchased and used.

The short time that has elapsed since these investigations were begun and the comparatively limited means for their prosecution have thus far permitted only the beginnings of a study of the food and nutrition of the people of the United States. The results already obtained, however, are very interesting and valuable.

The analyses made in connection with the studies of food supply and food consumption are already very numerous, so that the work in this direction has reached a tolerably satisfactory stage, as indicated by the compilation of the results of analyses to which reference is made in another place. There is, however, need of the improvement of the methods of analysis, and efforts in this direction are being made.

(3) *Experiments to compare the nutritive value and pecuniary economy of different combinations of food materials.*—These have been carried on in a boarding house for students connected with the Maine State College. The plan has been to observe first for a certain period the kinds, amounts, composition, and cost of the food ordinarily consumed. Then for a second period of a number of weeks, the more

costly animal foods, such as chicken, the hind quarter of beef, etc., were used largely as sources of protein. In a following period a large part of the protein was furnished by the cheaper meats and by legumes (e. g., beans). In other periods comparative trials were made with milk, the quantity of milk being limited in one period and supplied in as large amounts as the students would consume in another period. Five such experiments were made during the past two years.

As a general result the cheaper forms of protein have been found as nutritious and, on the whole, as satisfactory as the more expensive. The milk, instead of serving simply as a beverage, which is often thought to be its chief function, has been found to actually replace other food materials, so that as the amount of milk was increased the amount of meats was diminished. Thus, in a practical way, by tests with a large number of healthy young people, the nutritive value and the high pecuniary economy of the cheaper meats and of milk have been shown to agree with the teachings of chemical analysis.

(4) *Studies of the digestibility of foods.*—These have involved numerous chemical analyses of food materials and of undigested residues, and have been carried out at several places.

(5) *Investigations to determine the effects of cooking upon composition, digestibility, and nutritive value of food.*—These have been made with the cereals, including flour and bread, and with potatoes. This is a line of inquiry in which comparatively little thoroughly scientific work has been done. There is, however, an increasing demand for studies in this direction to furnish a scientific basis for the practical work in the improvement of cooking now being actively prosecuted by cooking schools and departments of domestic economy connected with educational institutions of different grades in many localities.

(6) *Investigations of the constitution and nutritive value of the carbohydrates of wheat and maize and of the changes produced upon them by cooking and by enzymic ferments.*

(7) *Studies of the heats of combustion of food materials.*—These have been carried on by means of the bomb calorimeter. This apparatus and the method of its use have been satisfactorily developed, so that now investigations of this kind can be conducted with a high degree of accuracy and at comparatively small cost for apparatus and labor. The results of this research can also be utilized by the agricultural experiment stations and kindred institutions in their investigations on the nutrition of domestic animals.

(8) *Experiments with the respiration calorimeter.*—Researches upon the laws of nutrition have brought us to the point where studies on topics relating to the conversion of food into matter and energy in the body are indispensable. During the last two decades various attempts have been made not only to perfect the methods for determining the income and outgo of matter, but also to measure the income and outgo of energy. An apparatus for this purpose, designated as the respiration calorimeter, has been in process of development for some years past at Wesleyan University where the work has been done in connection with the Storrs Experiment Station. During the past two years the Department has cooperated in this investigation in such ways as have already led to most useful results.

In the past year four respiration experiments were made with men in which the income and outgo of carbon and nitrogen were determined. The measurement of hydrogen, which has thus far defied experimenters, was not entirely successful, but the errors have been reduced to a small amount, and it is hoped that the modifications of

the apparatus already undertaken may reduce them still more and thus accomplish the accurate determination of this element in the income and outgo of the body. The measuring of the income and outgo of the other elements, as sulphur, phosphorus, and the metals, is not especially difficult. So far as the balance of matter is concerned, therefore, reasonable success seems to be well assured.

The determination of income and outgo of energy involves numerous difficulties. The potential energy of the food is shown by the bomb calorimeter. That of the materials consumed or stored in the body is inferred from the balance of nitrogen, carbon, and hydrogen as shown by the respiration experiments. The outgo of energy is to be sought in the heat given off from the body, in the external muscular work performed, and perhaps in other ways not yet explained. In the apparatus at Middletown arrangements are made for the measurement of the heat given off from the body. Such measurements have been made in several experiments, but some minor details of manipulation still remain to be perfected before the determinations are absolutely accurate. The success already attained, however, gives reason to hope for satisfactory results in the very near future. Devices are already being planned for measurement of the heat equivalent of the external muscular work.

In the respiration experiments the subjects have remained in the apparatus for periods varying from fifty-six hours to twelve days. As respiration experiments, these are much more detailed and complete than any others thus far made known. The detailed reports are already in the possession of the Department and will be given to the public in due time.

The character and amount of work performed in connection with the nutrition investigations during the past year is indicated in the following brief summary:

INVESTIGATIONS.

Connecticut.—At Middletown, under immediate direction of the special agent in charge, in cooperation with the Storrs Experiment Station and Wesleyan University: Analyses of food materials, including specimens collected in Middletown, New York, Pittsburg, Chicago, and elsewhere; investigations with the bomb calorimeter of the heats of combustion of the materials used for the food of man; experiments upon the digestibility of food materials by healthy men; researches on metabolism with men in a respiration calorimeter, including studies of the income and outgo of matter in respiration experiments and studies on the income and outgo of energy with calorimetric experiments; work on the improvement of the bomb calorimeter and the respiration calorimeter.

Maine.—At Orono, in cooperation with the Maine State College: Two dietary experiments in the students' boarding house with different classes of food materials, including analyses, one especial question being the nutritive value of milk as compared with other animal food materials; experiments on the baking of bread at different temperatures and the chemical changes involved.

New York City.—In cooperation with the Society for Improving the Condition of the Poor: Studies of food supply and of 10 dietaries of families in the congested districts of the city, with analyses of food materials used; studies of milk supply in different parts of New York City, and especially in the poorer districts, with analyses of specimens of milk. In connection with these studies, the amounts and costs of the food, together with numerous sociological data, were obtained. The studies of the milk supply included observations of the actual amounts sold to retail consumers for a quart, and the prices paid.

New Jersey.—At New Brunswick, in cooperation with the New Jersey State Experiment Station: Studies of the milk supply of several cities, including quality, composition, nutritive value, and price of milk as actually delivered to consumers.

Pennsylvania.—At Pittsburg, in cooperation with the Pennsylvania (female) College: Studies of 2 dietaries of iron-workers' families in Pittsburg, with analyses of food materials used.

Alabama.—In cooperation with the Tuskegee Normal Institute: Studies of dietaries of typical families of plantation negroes in the neighborhood of Tuskegee. The kinds and amounts of food consumed were carefully determined, and various observations were made regarding the conditions under which these families live, as they were believed to represent a very large class of negroes in the so-called Black Belt. A considerable number of specimens of the food materials were analyzed by the Alabama Agricultural Experiment Station at Auburn.

Tennessee.—At Knoxville, in cooperation with the University of Tennessee: Two dietary studies of mechanics' families, with analyses of the food materials used; studies of the chemical composition and nutritive value of beef, mutton, and poultry grown in East Tennessee; experiments on the digestibility of different food materials by healthy men.

New Mexico.—At Lascruces, in cooperation with the New Mexico Agricultural Experiment Station: Studies of 2 dietaries of native Mexican families, with analyses of food materials used in these dietaries and of other food products of New Mexico.

North Dakota.—At Fargo, in cooperation with the North Dakota Agricultural College: Dietary study of the college ladies' boarding house, with analyses of food materials used; analyses of flours and studies of the influence of smut upon the development of the wheat grain, and its effect upon the flour and bread products.

Minnesota.—At St. Anthony Park, in cooperation with the Minnesota Agricultural Experiment Station: Effect of cooking upon the composition of potatoes; digestibility of potatoes; digestibility of eggs in pepsin solution.

Illinois.—At Chicago, in cooperation with the Hull House: Studies of dietaries of families in congested districts, with analyses of food materials used.

Indiana.—At Lafayette, in cooperation with Purdue University: Studies of carbohydrates of wheat and maize, and of flour and bread therefrom; the action of enzymic ferments upon starches of different origins.

ADMINISTRATIVE AND EDITORIAL WORK.

Visiting different localities to make arrangements for investigations.

Correspondence and other official routine business.

Immediate supervision of the investigations in Middletown, Conn., and New York City.

Preparation of publications of which the authorship belongs entirely to the officers and special agents of the Department.

Verifying the data of reports of investigations made in various places by cooperation with the Department.

The completion and compilation of analyses of food materials.

Editing and proof reading of bulletins and reports.

As the nutrition investigations have become more thoroughly organized and more widely known, the correspondence and other routine business connected with this work have greatly increased. The work of verifying the tabulated data reported by the workers in different places, as well as of calculating the results of analyses, determinations with the bomb calorimeter, and the complicated data of the respiration experiments, has been much greater than heretofore.

PUBLICATIONS.

The following publications have been issued by this office during the past year in connection with the work in nutrition investigations:

The Chemical Composition of American Food Materials (Bulletin No. 28) contains summary tables giving the maximum, minimum, and average of all the analyses of American food products made up to the date of its publication, excepting butter and other dairy products. More than 2,600 analyses were included in this bulletin, and in its present form this standard table of food analyses is more complete and satisfactory than any similar table which has preceded it.

Dietary Studies at the University of Tennessee in 1895 (Bulletin No. 29) contains a detailed report of four dietary studies made by C. E. Wait, professor of chemistry in the University of Tennessee, with comments on these investigations, especially as compared with those made elsewhere by the special agents of the Department. "Three of the dietaries are those of a club of students connected with the

University, and the fourth is that of a typical mechanic's family in eastern Tennessee."

Dietary Studies at the University of Missouri in 1895 and data Relating to Bread and Meat Consumption in Missouri (Bulletin No. 31) is a detailed report of investigations by Profs. H. B. Gibson, S. Calvert, and D. W. May of the University of Missouri, with comments by the special agents of the Department. Two dietary studies of a students' club at the University of Missouri, and an investigation of the relative bread and meat consumption in families in the State are included in this report.

Dietary Studies at Purdue University, Lafayette, Ind., in 1895 (Bulletin No. 32), contains a detailed report of investigations by W. E. Stone, professor of chemistry in Purdue University, with comments by the special agents of the Department. Two dietary studies, one with the family of a teacher and the other with the family of a mechanic, are included in this bulletin. "The dietary study with the teacher's family is particularly interesting, since it corresponds quite closely with the current dietary standards, and at the same time the cost is very moderate. It is a good example of what may be accomplished by judicious expenditure of money and careful selection of available food materials."

Meats: Composition and Cooking (Farmers' Bulletin No. 34) summarizes the results of investigations regarding the nutritive value of different kinds of meat, and points out some of the things which should be considered in the cooking of meats for different purposes. A summary table appended to this bulletin was based upon all the available data regarding the composition and fuel value of American meats.

Four large charts, in colors, illustrating the practical results of food investigations, were printed at the Weather Bureau and sent out as publications of this office. These charts have been distributed to universities, colleges, normal, technical, and professional schools, cooking schools, high schools, and academies.

A series of schedules to be used in recording nutrition investigations have been published during the year, with a view to securing uniformity and comparability of the data obtained in these investigations.

The following bulletins have also been completed in manuscript and will soon be submitted for publication: A detailed compilation of analyses of American food materials; a report on investigations on bread and milk in New Jersey, and one dietary study of a mechanic's family; a report on investigations on the carbohydrates of wheat and maize, and of flour and bread; milk as food; and fish as food. The results of other investigations, and especially of experiments with the respiration calorimeter, have been received and are being put in final form for publication.

One thing which has been emphasized by the Department work in this line, especially among the colleges and experiment stations, is the need of compilation of the results of inquiry in this country and in Europe. The wide dispersion and large amount of the literature of this subject have not been fully known even to those most familiar with such studies. The necessity of reducing the material already published in different languages to such form as will make it available to our students and investigators is fundamental. Unless this is done there will be reduplication of work and costly errors which might easily have been avoided. The Department has already done considerable work to supply this deficiency, and its efforts in this

direction should be continued. The results of such analyses of American materials used for the food of man as were available up to July 1, 1896, have been collated and are now ready for publication. The materials included are those which are ordinarily sold in the market, and the value of which is due to their content of the nutrients, protein, fats, and carbohydrates. Unground cereals have been excluded, and only a portion of the analyses of milk, sugar, and other materials commonly examined to detect adulteration have been given. The number of analyses collated is over three thousand. These include a large number made by the Division of Chemistry of this Department, and by Professor Atwater in connection with the World's Columbian Exposition. It is interesting to note that over one-half of these have been made so lately that they still await publication. A summary table based upon the detailed compilation has already been published, and supplies a long-felt need for a reliable standard table which might be generally used in computing the nutritive values of our ordinary food materials. This alone, it is believed, would justify much more than the whole expenditure thus far incurred in the inquiry.

Reference is made in another place to the compilation of the investigations on metabolism. A large amount of the work on this compilation has been done in connection with the nutrition investigations. It is hoped that opportunity may hereafter be afforded for the continuance of this important work on other subjects relating to the science of nutrition.

CONTINUANCE OF THE INVESTIGATIONS.

Congress having provided for the continuance of nutrition investigations during the present fiscal year, arrangements have been made for carrying them on in accordance with the general plan outlined above. In most cases the work already begun needs to be continued in the same manner and in the same locality until more complete data or more conclusive results are obtained. An effort will be made, however, to broaden somewhat the range of studies on food supply and consumption. It is hoped to complete arrangements for some such studies on the Pacific Coast. The amount of money available for this work, even when used in conjunction with the funds contributed by the different institutions cooperating with the Department in this enterprise, is not sufficient to justify further extension of these investigations. The number and complexity of the problems requiring investigation before a complete science of the nutrition of man can be established and the extent and variety of the data to be collated before a just and exact knowledge of the food supply and food habits of our people can be obtained, with reference to definite suggestions for more wholesome and economical dietaries, make it imperative to confine the use of the limited funds at the disposal of the Department for nutrition investigations in those lines which are most immediately pressing.

APPENDIX.

CIRCULAR NO. 29.—WORK AND EXPENDITURES OF AGRICULTURAL EXPERIMENT STATIONS.

In connection with examinations of the work and expenditures of the agricultural experiment stations established in accordance with the act of Congress of March 2, 1887, under authority given to the Secretary of Agriculture by Congress, questions have arisen which have seemed to make it advisable to formulate the views of this Department on certain matters affecting the management of the stations under that act. The statements given below have therefore been prepared to cover the points which seem to require special attention:

EXPENDITURES FOR PERMANENT SUBSTATIONS.

This Department holds that the expenditure of funds appropriated in accordance with the provisions of the act of Congress of March 2, 1887, for the maintenance of permanent substations, is contrary to the spirit and intent of said act. The act provides for an experiment station in each State and Territory, which except in cases specified in the act, is to be a department of the college established under the act of Congress of July 2, 1862. The objects of the stations as defined in the first-mentioned act are evidently of such a character as to necessitate the services of scientific and expert workers. Most of the lines of investigation named in the act are general rather than local, and involve scientific equipment and work. It is obviously the intent that the stations established under this act shall carry on important investigations which shall be of general benefit to the agriculture of the several States and Territories. The sum of $15,000 which is annually appropriated by Congress under this act for each station is only sufficient to carry out a limited number of investigations of the kinds contemplated by the act.

As the work of the stations in the different States has developed, it has been found necessary to limit rather than expand the lines of work of the individual stations. Thorough work in a few lines has been found much more effective and productive of more useful results than small investigations in numerous lines. When we consider the nature of the investigations, the amount of money provided for the work of each station, and the fact that the act expressly provides for only a single station in connection with each college, it becomes very clear that expenditures such as are necessary to effectively maintain permanent substations ought not to be made from the funds granted by Congress to the States and Territories for experiment stations. The maintenance of permanent substations as a rule involves the erection of buildings and the making of other permanent improvements. The sums of money which can be expended for permanent improvements under the act of Congress aforesaid are so small that it is clear they were not intended to meet the needs of more than one station in each State and Territory.

When the legislature of a State or Territory has given its assent to the provisions of the act of Congress of March 2, 1887, and has designated the institution which shall receive the benefits of said act, it would seem to have exhausted its powers in the matter. The responsibility for the maintenance of an experiment station under said act devolves upon the governing board of the institution thus designated. If the legislature of the State or Territory sees fit to provide funds for the equipment and maintenance of other experiment stations and to put them under the control of the same governing board, well and good, but this does not in any way diminish the responsibility of the board to administer the funds granted by Congress in accordance with the provisions of said act.

The wisdom of Congress in limiting the number of stations to be established in each State and Territory under the aforesaid act has been clearly shown by the experience of the few States and Territories which have attempted the maintenance of substations with the funds granted under said act. The expense of maintaining substations has as a rule materially weakened the central station, and the investigations carried on at the substations have been superficial and temporary. It is granted that in many States and Territories more than one agricultural experiment station might do useful work, and in some States more than one station have already been successfully maintained; but in all these cases the State has given funds from its own treasury to supplement those given by Congress. It is also granted that experiment stations established under said act of Congress and having no other funds than those provided by that act will often need to carry on investigations in different localities in their respective States and Territories, but it is held that this should be done in such a way as will secure the thorough

supervision of such investigations by the expert officers of the station and that arrangements for such experimental inquiries should not be of so permanent a character as to prevent the station from shifting its work from place to place as circumstances may require, nor involve the expenditure of funds in such amounts and in such ways as will weaken the work of the station as a whole.

As far as practicable the cooperation of individuals and communities benefited by these special investigations should be sought, and, if necessary, the aid of the State invoked, to carry on enterprises too great to be successfully conducted within the limits of the appropriation granted by Congress under the act aforesaid.

PURCHASE OR RENTAL OF LANDS FOR AGRICULTURAL EXPERIMENT STATIONS.

This Department holds that the purchase or rental of land by the experiment stations from the funds appropriated in accordance with the provisions of the act of Congress of March 2, 1887, is contrary to the spirit and intent of said act. The act provides for "paying the necessary expenses of conducting investigations and experiments and printing and distributing the results: * * * *Provided, however*, That out of the first annual appropriation so received by any station an amount not exceeding one-fifth may be expended in the erection, enlargement, or repair of a building or buildings necessary for carrying on the work of such station; and thereafter an amount not exceeding 5 per centum of such annual appropriation may be so expended." The only reference to land for the station in the act is in section 8, where State legislatures are authorized to apply appropriations made under said act to separate agricultural colleges or schools established by the State "which shall have connected therewith an experimental farm or station." The strict limitation of the amount provided for buildings and the absence of any provision for the purchase or rental of lands, when taken in connection with the statement in the eighth section which treats the farm as in a sense a necessary adjunct of the educational institution to which the whole or a part of the funds appropriated in accordance with said act might in certain cases be devoted, point to the conclusion that it was expected that the institution of which the station is a department would supply the land needed for experimental purposes and that charges for the purchase or rental of land would not be made against the funds provided by Congress for the experiment station. This conclusion is reenforced by considerations of a wise and economic policy in the management of agricultural experiment stations, especially as relating to cases in which it might be desirable for the station to have land for experimental purposes in different localities. The investigations carried on by the stations in such cases being for the direct benefit of agriculture in the localities where the work is done, it seems only reasonable that persons or communities whose interests will be advanced by the station work should contribute the use of the small tracts of land which will be required for experimental purposes. Experience shows that in most cases the stations have had no difficulty in securing such land as they needed without expense, and it is believed that this may be done in every case without injuriously affecting the interests of the stations.

EXPENDITURES BY AGRICULTURAL EXPERIMENT STATIONS FOR CARRYING ON FARM OPERATIONS.

This Department holds that expenses incurred in conducting the operations of farms, whether the farms are connected with institutions established under the act of Congress of July 2, 1862, or not, are not a proper charge against the funds appropriated by Congress for agricultural experiment stations in accordance with the act of Congress of March 2, 1887, unless such operations definitely constitute a part of agricultural investigations or experiments planned and conducted in accordance with the terms of the act aforesaid under rules and regulations prescribed by the governing board of the station. The performance of ordinary farm operations by an experiment station does not constitute experimental work. Operations of this character by an experiment station should be confined to such as are a necessary part of experimental inquiries. Carrying on a farm for profit, or as a model farm, or to secure funds which may be afterwards devoted to the erection of buildings for experiment-station purposes, to the further development of experimental investigations, or to any other purpose, however laudable and desirable, is not contemplated by the law as a part of the functions of an agricultural experiment station established under the act of Congress of March 2, 1887. Section 5 of that act plainly limits the expenditures of funds appropriated in accordance with said act to "the necessary expenses of conducting investigations and experiments and printing and distributing the results."

FUNDS ARISING FROM THE SALE OF FARM PRODUCTS OR OTHER PROPERTY OF AN AGRICULTURAL EXPERIMENT STATION.

This Department holds that moneys received from the sales of farm products or other property in the possession of an agricultural experiment station as the result of expenditures of funds received by the station in accordance with the act of Congress of March 2, 1887, rightfully belong to the experiment station as a department of the college or other institution with which it is connected, and may be expended in accordance with the laws or regulations governing the financial transactions of the governing board of the station, provided, however, that all expenses attending such sales, including those attending the delivery of the property into the possession of the purchaser, should be deducted from the gross receipts from the sales and should not be made a charge against the funds appropriated by Congress.

LIMIT OF EXPENDITURES OF EXPERIMENT STATIONS DURING ONE FISCAL YEAR.

This Department holds that expenses incurred by an agricultural experiment station in any one fiscal year to be paid from the funds provided under the act of Congress of March 2, 1887, should not exceed the amount appropriated to the station by Congress for that year, and especially that all personal services should be paid for out of the appropriation of the year in which they were performed, and that claims for compensation for such services can not properly be paid out of the appropriations for succeeding years. The several appropriations for experiment stations under the aforesaid act are for one year only, and officers of experiment stations have no authority to contract for expenditures beyond the year for which Congress has made appropriations.

This is plainly implied in the act aforesaid, inasmuch as section 6 provides that unexpended balances shall revert to the Treasury of the United States, "in order that the amount of money appropriated to any station shall not exceed the amount actually and necessarily required for its maintenance and support." The annual financial report rendered in the form prescribed by this Department should in every case include only the receipts and expenditures of the fiscal year for which the report is made.

EXPENDITURES BY AGRICULTURAL EXPERIMENT STATIONS FOR A WATER SYSTEM TO BE CHARGED UNDER "BUILDING AND REPAIRS."

This Department holds that expenditures by agricultural experiment stations from the funds appropriated in accordance with the act of Congress of March 2, 1887, for the construction of wells, cisterns, ponds, or other reservoirs for the storage of water, and for piping and other materials for a system of storing and distributing water, are properly charged under abstract 18 in the schedule for financial reports prescribed by this Department as being for improvements on land which have hitherto been held to come under the head of "building and repairs." The fact that a water system may be a necessary adjunct of certain experimental inquiries does not affect the case, inasmuch as the limitations on expenditures for improvements contained in section 5 of the act of Congress of March 2, 1887, expressly stipulate that these improvements shall be such as are necessary for carrying on the work of the station.

EXPENDITURES BY AGRICULTURAL EXPERIMENT STATIONS FOR MEMBERSHIP IN AGRICULTURAL AND OTHER ORGANIZATIONS.

This Department holds that membership fees in associations and other organizations are not a proper charge against the funds appropriated by Congress in accordance with the act of March 2, 1887, except in the case of the Association of American Agricultural Colleges and Experiment Stations, which is held to be an essential part of the system of experiment stations established under said act.

THE BORROWING OF MONEY TO PAY THE EXPENSES OF AGRICULTURAL EXPERIMENT STATIONS.

This Department holds that experiment station officers have no authority to borrow money to be repaid out of appropriations made under the act of Congress of March 2, 1887, and that charges for interest can not properly be made against funds appropriated under that act.

A. C. TRUE, *Director*.

Approved:

J. STERLING MORTON, *Secretary*.

WASHINGTON, D. C., *March 10, 1896*.

REPORT OF THE SPECIAL AGENT AND ENGINEER FOR ROAD INQUIRY.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF ROAD INQUIRY,
Washington, D. C., September 4, 1896.

SIR: I have the honor to submit herewith a report of the operations of the Office of Road Inquiry for the fiscal year ending June 30, 1896.

Respectfully,

ROY STONE,
Special Agent and Engineer.

Hon. J. STERLING MORTON,
Secretary.

WORK OF THE YEAR.

The Office of Road Inquiry, instituted October 3, 1893, has continued its work during the past fiscal year under the same plans and methods as were indicated by the Secretary of Agriculture at its organization, and has constantly availed itself of voluntary assistance in many directions. Its work has been thoroughly acceptable to the various State organizations engaged in the work for road improvement as well as to the governments of the States, and has undoubtedly stimulated as well as assisted the general movement in this direction.

ROAD IMPROVEMENT CONVENTIONS.

In October, 1895, a very successful National Road Parliament, representing thirty-two States, was held at Atlanta, Ga., and during the year two governors of States, those of Arkansas and Michigan, have officially called State conventions for the organization and furtherance of this movement. These conventions were largely attended, and will undoubtedly result in great advancement of the cause. Most of the legislatures which have been in session have undertaken action in the various lines of legislation necessary.

ROAD CONSTRUCTION.

Actual construction of improved roads has progressed steadily in many States, notwithstanding the depression in finances and industries, and it is safe to estimate that nearly 1,000 miles of first-class highways have been constructed during the year.

The methods of authorization of road improvement and of construction of roads and payment of the cost thereof are still as various

as before, each State having practically its own system, and this office has occupied itself to a considerable extent in observing the advantages and disadvantages of the various methods employed, both as to comparative excellence in construction and as to comparative ease in the burden of cost. Through this inspection it has become very apparent that a State supervision is highly necessary to the economical and effective construction of improved highways.

In cases where counties have acted independently, the actual supervision and direction have been too often remitted to the local township officials, and by this means the old barriers to thorough and good road work have been continued in full force. The neighborhood influences, political or otherwise, which almost invariably control the action of local officials, have resulted in the failure to relocate roads where relocation was required, and to properly inspect materials and guard against mistakes in construction. The result has been in many cases a waste, or worse than waste, of the money expended, from the fact that a large expenditure on a mislocated road will generally prevent any future correction of its location, and that the macadamizing of roads on steep grades is more often an injury than a benefit.

The States which are proceeding under a State-aid system, or a system of direct State construction, are doing excellent work.

The use of convict labor on road improvement has steadily extended, particularly in the Southern States, and almost invariably with good results.

PUBLICATIONS.

The publications of the office have been less numerous than in the year preceding, but are of practical value. They comprise:

Circular No. 18. Report of Legislative Commission of Virginia Road Improvement Association.
Circular No. 19. Total Traffic of Country Roads and its Cost.
Circular No. 20. Comments on Systems of Maintaining Country Roads.
Circular No. 21. Methods of Constructing Macadamized Roads in Great Britain.
Circular No. 22. Appeal for State Organization in Tennessee.
Circular No. 23. Money Value of Good Roads to Farmers.
From Yearbook, 1894: Best Roads for Farms and Farming Districts. State Highways in Massachusetts. Improvement of Public Roads in North Carolina.
From Yearbook, 1895: Cooperative Road Construction.

In addition to this list, Bulletin No. 20 will give an account of the construction of experimental roads in and near the exposition grounds at Atlanta, Ga., together with the traction tests of various vehicles on roads of different grades and surface.

EDUCATIONAL COOPERATION.

The office has made an effort to secure the cooperation of the educational department of the Government and of educational organizations, officials, and teachers throughout the United States in its work, and to that end has corresponded with the Commissioner of Education of the United States and all the State and county superintendents of schools, and addressed the National Teachers' Convention held at Buffalo. Very favorable responses have been received from the Commissioner of Education and many of the State and county superintendents, and it is to be hoped that a successful cooperation in this work will be established, and that not only a sufficient amount of primary education in road construction may be given in the country schools, but that

some practical application of that instruction may be made in the improvement of highways in the neighborhood of schoolhouses and in the daily care of roads throughout school districts.

Many new local organizations for road improvement have been formed during the year, with such assistance and cooperation as this office has been able to give.

Perhaps the most effective work that has been done has been in attending and addressing meetings of various organizations, and especially of farmers' institutes throughout the country, but the limited force and means available have greatly narrowed this branch of the work.

ROAD EXHIBIT AND TRACTION TESTS.

The construction of experimental roads in and near the exposition grounds at Atlanta, Ga., together with the traction tests of various vehicles on roads of different grades and surfaces, mentioned in the last report, were highly successful in arousing interest in the general subject and diffusing information thereon.

Several meetings of the National Road Parliament were held on the grounds of the road exhibit in the exposition, and the practical tests of the various roads were made in the presence of the members. These roads were so grouped as to compare and contrast the good and the bad roads, both as to their appearance and efficiency, and they furnished a complete demonstration of the value of good roads as well as an object lesson in their construction.

The scientific tests of traction were made by means of a tractometer, built and operated under the supervision of Professor Carson, of the University of Tennessee, from plans designed by this office, but modified and adapted by him. Upon this instrument, probably for the first time in all traction tests, the power used in moving a load could be read at any time from the roadside, making a very instructive and effectual exhibition. For a more permanent record, however, it was necessary to modify the instrument and make it a recorder as well. This was done later, in Washington, under the supervision of the assistant, Mr. Neely, in the manner fully described in Bulletin No. 20. By this means very important graphic representations have been made of the power used in hauling a given load over various roads. The instrument as modified for this purpose has been named the tractograph.

In addition to the traction tests made at the Atlanta exposition, a valuable experiment was made to demonstrate the practical advantages of wide tires over narrow tires and of wagons of which the front wheels track inside the rear ones. This experiment is also detailed in Bulletin No. 20.

PLANS FOR THE ENSUING YEAR.

It is proposed for the ensuing year to give as much personal attendance as possible upon farmers' conventions and institutes where a portion of the time is devoted to the question of road improvement, and at supervisors' meetings and special road improvement assemblies wherever they can be reached.

The department of agriculture of the State of Pennsylvania has asked for the cooperation of the Office of Road Inquiry during the numerous "good roads" days of the various farmers' assemblies throughout the present summer and autumn and the 300 farmers' institute meetings to be held during the coming winter.

Many invitations are received from more distant States, with which it is impossible to comply without more men and money.

This branch of the work can be very profitably combined with the general inquiry branch provided for by the act of Congress. The lecturers wherever they go will naturally devote themselves to the investigation of the systems of road management, the methods of road making and repairs, and the search for road-making materials, together with a careful inspection of all newly constructed roads and a general study of road conditions and needs.

COOPERATION WITH EXPERIMENT STATIONS.

Quoting from the last report—

The appropriation establishing this inquiry provides for "enabling the Secretary of Agriculture to assist the agricultural colleges and experiment stations in disseminating information on this subject" (road making). No practicable method has heretofore been discovered for carrying out this provision, but upon consultation with the director of experiment stations I am disposed to recommend the object-lesson method of disseminating such information by means of roads constructed for actual use on or adjacent to farms of experiment stations, such roads to be laid out and constructed under the supervision of this office. This would accomplish a treble purpose—first, in the economic administration of these farms; second, in the instruction of those concerned in road making; and, third, in presenting the advantages of good roads to the visiting public.

It is to be regretted that no definite progress has been made in this direction, although a strong interest has been manifested in the proposal by the officers and directors of the colleges and experiment stations. Object-lesson roads should be made with great care, not merely to serve as samples of the best that is practicable, but to be so adapted to the several locations as to show the best uses of the local materials. For this purpose a careful inspection and study of each locality must be made by a competent engineer of more than ordinary experience and judgment in road building. This has been impracticable under the present appropriation, but it may also be profitably combined in the future with the proposed duties of the itinerant representatives of the office. A beginning can be made in this direction under the present appropriation, and a full development in the following year if the appropriation is sufficient. It is believed that for the expense of the actual road building a cooperation can be established that will distribute the cost so that it may fall very lightly upon all concerned. The State, county, and township and neighborhood in which the experiment station is located will all have an interest in the work, and the college and station will doubtless render assistance, so that a very moderate contribution on the part of the Government, together with the necessary supervision of construction, will be all that is necessary on its part.

BROADENING THE INQUIRY.

The acknowledged usefulness of this office in its narrow field has led the friends of the road movement to urge the extension and broadening of the inquiry; and accordingly a joint resolution was introduced in Congress providing that the "inquiries and investigations relating to public roads" be extended to the following subjects, namely:

First. The scientific location of highways on the public domain.

Second. The practical use that can be made of the U. S. Geological Survey in the discovery of road materials.

Third. The methods and conditions under which free testing of road materials can be afforded.

Fourth. The feasibility and most practical methods of securing instruction in road building at agricultural colleges, the Military Academy, and all institutions having military instructors.

Fifth. What measures can be adopted to secure the general reduction of transportation rates on road materials.

And for the furtherance of these inquiries and investigations the Secretary of Agriculture is authorized to request the cooperation of the Secretary of War, the Secretary of the Interior, and the Interstate Commerce Commission.

This resolution was passed by the House and remains pending in the Senate. Should this resolution be finally passed or its substance incorporated in the Agricultural appropriation bill, a very considerable additional labor would devolve upon this office, as it must necessarily take the lead in the entire investigation.

ESTIMATES.

In view of the foregoing and without going into details, which is obviously impracticable, an increase in the appropriation for the Office of Road Inquiry for the year ending June 30, 1898, to the total amount of $15,000 is respectfully recommended.

REPORT OF THE CHIEF OF THE SEED DIVISION.

U. S. DEPARTMENT OF AGRICULTURE,
SEED DIVISION,
Washington, D. C., June 30, 1896.

SIR: In compliance with the instructions contained in your communication of June 27, 1896, I have the honor to submit the accompanying report of the operations of the Seed Division from October 1, 1895, to June 30, 1896. The period from July 1, 1895, to October 1, 1895, is covered by the report of my predecessor, Mr. M. E. Fagan, submitted on October 1, 1895.

The undersigned assumed charge of the Seed Division on May 1, 1896, relieving Mr. M. E. Fagan, resigned.

Respectfully,

C. J. ASHTON,
Chief.

Hon. J. STERLING MORTON,
Secretary.

THE WORK OF THE SEED DIVISION FROM OCTOBER 1, 1895, TO JUNE 30, 1896.

DISTRIBUTION OF SEED.

On March 31, 1896, a contract was made by the Department of Agriculture with Messrs. D. Landreth & Sons, Philadelphia, Pa., for the purchase of 10,125,000 packets of vegetable seed of the weights and varieties prescribed in the circular inviting bids issued from this Department on March 18, 1896. These seed were to be put up in sealed packages of 15 packets each, unless otherwise directed, and delivered to the mails at Bristol, Pa., labeled and franked with addresses to be furnished by the Department of Agriculture.[a] On March 31, 1896, a contract was also made by the Department with Messrs. L. L. May & Co., St. Paul, Minn., for the purchase of 1,000,000 packets, averaging

[a] In accordance with the wishes of Congress, this contract was amended on April 6, 1896, so as to provide for packages of 5 packets each in place of 15.

300 packets to the pound, of rare and choice varieties of flower seed. These seed were to be put up in packages of 5 packets each and delivered to the mails at St. Paul in a similar manner to those furnished by Messrs. Landreth & Sons at Bristol. The duty of receiving, preparing, counting, and forwarding franks for the transmission of these seed through the mails in accordance with the orders of Senators, Representatives, and Delegates in Congress, and the Secretary of Agriculture was assigned to this division. Mr. E. S. Harnden, special agent of the Department, supervised the delivery and forwarding of the vegetable seed from Bristol, and Mr. George McMillan, special agent, supervised the delivery and forwarding of those sent from St. Paul.

The first orders for the delivery of both flower and vegetable seeds were forwarded from this division to the contractors at St. Paul and Bristol, respectively, on the 11th of April. These orders continued to be sent until the 29th of May, on which date the last order for vegetable seed was forwarded to Bristol. On June 5 all orders for vegetable seed having been filled, the small balance of seed remaining in the hands of the contractors at Bristol was ordered sent to the Department at Washington. The last order for flower seed was forwarded to St. Paul on June 6, and on June 12 the balance left at St. Paul, after all orders from the Department had been filled, was directed sent to Washington.

In addition to the regular Congressional quota of two-thirds of the entire lot of seed purchased, prescribed by law, the Secretary of Agriculture directed that each Senator, Representative, and Delegate be given 1,000 additional packages of vegetable seed and 40 packages of flower seed on application. As will be seen in the accompanying table, nearly all of the Senators and Representatives applied for and received this extra amount of seed. The seed expended in this way were taken from the amount remaining to the Secretary's credit after the regular Congressional distribution had been made.

The accompanying tables will show the distribution of these seed.

GOVERNMENTAL AND CONGRESSIONAL DISTRIBUTION OF SEEDS.

The following statement shows the number of packages (of 5 packets each) sent out by mail from Bristol, Pa., by David Landreth & Sons, contractors for furnishing vegetable seed, and from St. Paul, Minn., by L. L. May & Co., contractors for furnishing flower seed, on orders given by the Department of Agriculture through the Division of Seeds:

Description of seed.	For Senators, Representatives, and Delegates in Congress.	To correspondents of the Division of Statistics.	To miscellaneous applicants. *a*	Total.
	Packages.	*Packages.*	*Packages.*	*Packages.*
Vegetable	1,774,536	191,993	58,471	2,025,000
Flower	143,180	42,694	14,126	200,000
Total	1,917,716	234,687	72,597	2,225,000

a This includes balance turned over to Department, orders of Secretary and Assistant Secretary, Weather Bureau, miscellaneous applicants, and Kickapoo Indians.

The following statement shows the number of packages (of 5 packets each) of vegetable and flower seeds ordered sent out by mail from Bristol, Pa., and St. Paul, Minn., by the Department of Agriculture through the Division of Seeds:

Orders.	Vegetable seed.	Flower seed.
	Packages.	*Packages.*
First Congressional quota	1,314,832	121,918
Second Congressional quota	380,957	15,445
Additional Congressional quota	78,747	5,784
Orders of Secretary of Agriculture	17,656	159
Orders of Assistant Secretary of Agriculture	2,812	1,926
Orders of Division of Statistics	191,993	42,694
Orders of Weather Bureau	7,625	
To miscellaneous applicants	27,519	8,947
To Kickapoo Indians	500	
Balance turned over to Department	2,359	3,127
Total	2,025,000	200,000

DISTRIBUTION OF FARMERS' BULLETINS.

The work of receiving and distributing Farmers' Bulletins was assigned to this division on October 1, 1895. This distribution included those sent out under Congressional orders and to miscellaneous applicants. The allotment of these bulletins to each Senator, Representative, and Delegate in Congress for the current fiscal year was 4,000 copies. After the 1st of May it was found that many Members were desirous of obtaining additional copies, and the division was directed to give all Senators and Representatives applying therefor 2,000 additional copies. These additional bulletins were taken from those remaining on hand uncalled for by Members of Congress. The following table will show the number of Farmers' Bulletins received and distributed by this division from October 1, 1895, to June 30, 1896, inclusive:

Statement showing number of Farmers' Bulletins on hand October 1, 1895; also number received and distributed monthly from October 1, 1895, to June 30, 1896, and number on hand July 1, 1896.

Dates.	Bulletins on hand.	Bulletins received.	Congressional distribution.	Miscellaneous distribution.
	Copies.	*Copies.*	*Copies.*	*Copies.*
October 1, 1895	457,065			
October, 1895		82,900	34,925	27,195
November, 1895		53,100	71,228	19,879
December, 1895		50,700	91,255	12,368
January, 1896		140,900	142,450	16,620
February, 1896		169,600	209,105	34,695
March, 1896		454,875	194,853	18,682
April, 1896		205,000	116,605	58,575
May, 1896		100,300	164,510	53,275
June, 1896		359,900	243,609	41,066
July 1, 1896	583,445			
Total		1,677,275	1,268,540	282,355

RECAPITULATION.

	Copies.
Bulletins on hand October 1, 1895	457,065
Bulletins received from October 1, 1895, to June 30, 1896	1,677,275
	2,134,340
Bulletins on hand July 1, 1896	583,445
Bulletins distributed from October 1, 1895, to June 30, 1896	1,550,895
	2,134,340

MISCELLANEOUS WORK.

In addition to the foregoing, the following miscellaneous work was done in the mailing room of this division for other divisions of the Department during the period from October 1, 1895, to June 30, 1896:

For Division of Statistics 448,155 pieces of mail were enveloped and sent out and 18,600 addressed franks attached to envelopes.

For Division of Botany 7,445 pieces of mail were enveloped and sent out.

For the Weather Bureau 2,182,000 cards, form 1043 A, were counted, put up, and mailed to various stations in the United States.

For the Printing Office sheets to make up 10,000 copies of Circular No. 7, Section of Foreign Markets, were folded and tipped; sheets to make up 5,000 copies Price List of Publications were folded and sewed; sheets to make up 3,025 copies Circular No. 11, How to Select Good Cheese, were folded and sewed.

REPORT OF THE SPECIAL AGENT ON SEED DISTRIBUTION.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF SPECIAL AGENT FOR THE PURCHASE
AND DISTRIBUTION OF SEEDS,
Washington, D. C., November 2, 1896.

SIR: I have the honor to submit herewith the report of the distribution of vegetable seeds furnished this Department by D. Landreth & Sons, of Philadelphia, Pa., for the fiscal year ending June 30, 1896.

Respectfully,

ENOS S. HARNDEN,
Special Agent.

Hon. J. STERLING MORTON,
Secretary.

SEED DISTRIBUTION, 1896.

The special agent on seed distribution was appointed shortly after the awards of the contracts for seed to Messrs. D. Landreth & Sons, of Philadelphia, Pa., and to Messrs. L. L. May & Co., of St. Paul, Minn., for vegetable and flower seeds, respectively. The distribution of the vegetable seeds was placed under the personal supervision of the special agent, another agent being engaged to supervise the distribution of the flower seeds at St. Paul. Under this arrangement the writer of the present report proceeded to Bristol, Pa., where the seedhouse of the Messrs. Landreth & Sons is situated, and where the vegetable seeds were to be put up and mailed.

Through the courtesy of the Post-Office Department at Washington a postal substation was established with headquarters at the seed warehouse, and a clerk placed in charge so as to permit of the seed bags being mailed directly there and placed on board the cars at the seedhouse itself without being transported to and handled in the Bristol post-office. A great deal of time, labor, and expense was thereby avoided, and the post-office authorities are entitled to the cordial thanks of the Department for the saving thus effected.

The writer took charge of the work at Bristol on the 1st day of April, 1896.

The first shipment in the distribution of vegetable seeds for the Department of Agriculture for the fiscal year ending June 30, 1896, began on April 23. The last shipment, consisting of the balance then

remaining on hand, was made June 6. Following is a list of each day's shipment during the time of distribution:

Date.	Mail sacks.	Mail packages.	Date.	Mail sacks.	Mail packages.
April 23	387	87,000	May 13	385	78,000
April 24	82	18,000	May 14	223	33,000
April 27	300	69,000	May 15	349	70,172
April 29	305	64,417	May 16	258	45,000
April 30	221	40,079	May 18	472	92,478
May 1	273	41,358	May 19	926	87,932
May 2	273	43,429	May 20	903	125,293
May 4	174	32,897	May 21	313	61,000
May 5	306	58,821	May 22	452	93,179
May 6	315	56,782	May 23	336	60,000
May 7	385	67,991	May 25	424	73,095
May 8	376	79,140	May 27	467	61,421
May 9	290	58,165	May 28	a 640	87,859
May 11	322	65,383	June 6	2,935	43,090
May 12	594	92,992			

a To the Department of Agriculture at Washington.

The total weight of the entire lot of seeds, when placed on board the mail cars, was estimated at 465,756 pounds, the cost of postage on which would have been $74,520.96 if paid by private individuals at the regular postage rate on seeds. Thirty mail cars were required to transport this immense bulk. A careful estimate shows that the seeds sent out by the Department of Agriculture during this distribution were sufficient to plant the following acreage:

	Acres.		Acres.
Pease	607	Melon, water	1,152
Beans	1,134	Onion	1,183
Sweet corn	8,348	Parsley	1,160
Asparagus	35	Parsnip	970
Beet	2,985	Pumpkin	1,161
Cabbage	21,038	Radish	1,737
Carrot	530	Salsify	17
Cauliflower	228	Spinach	378
Celery	892	Squash	787
Cucumber	3,266	Tomato	10,712
Eggplant	392	Turnip	1,088
Kale	820		
Lettuce	10,786	Total	73,644
Melon, musk	2,228		

This total of 73,644 acres is a trifle over 115 square miles of ground, which area would make a strip of ground 1 rod in width and 36,817 miles in length, or nearly 1½ times the circumference of the earth, and a fast express train traveling at the rate of 60 miles per hour along this garden patch would require fifty-one days three hours and fourteen minutes to pass from one end to the other; or, had the seed been planted in a single row it would be 175,391 miles in length, more than 7 times the equatorial circumference of the earth.

Estimating each Congressional quota on a basis of 450 equal parts, each Senator, Member, and Delegate would receive sufficient seed to plant a trifle more than 163½ acres to garden truck.

The cost to the Department of Agriculture of the 10,125,000 packets of vegetable seeds amounted to $75,000, and adding the estimated cost of mailing at the sum previously mentioned ($74,520) the total expense to the Government was $149,520.

Samples of all seeds sent out were taken from the tables and machines as the seeds were being put into the mailing packages, and

at the end of each day's work the same were forwarded to the seed laboratory in the Division of Botany, where they were carefully and thoroughly tested by Mr. Gilbert H. Hicks, whose report testifies to the satisfactory character of the seeds supplied.

A careful record was kept of all shipments of the blank franks, where lots of more than 25 packages were mailed to one person, and also of the miscellaneous lots of addressed franks from each Senator and Member of Congress; and receipts were taken from the postmaster and the postal clerk furnished by the Post-Office Department as fast as the seeds were shipped.

To show how thoroughly the seeds were distributed, what a wide field was covered, and to what useful purposes the distribution of valuable seeds was devoted, the record of the packages mailed, showing by whose order the seeds were mailed, to whom sent, the post-office address, and the date they were sent out accompanies this report.

One hundred and sixteen thousand three hundred and twenty mail packages were distributed on account of the Department to statistical correspondents, correspondents of the Weather Bureau, and in answer to requests from individuals in different States.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, and the number of packages mailed and date of mailing.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Aldrich, N. W	Rhode Island	Miscellaneous individuals	Miscellaneous addresses in Rhode Island	2,253	May 18, 1896
		Hon. N. W. Aldrich	Room 21, Maltby Building, Washington, D. C	747	Do.
		Woonsocket Agricultural Society, Chas. M. Arnold.	Newport, R. I	250	May 25, 1896
		Washington County Agricultural Society, Jno. G. Clark, secretary.	West Kensington, R. I	250	Do.
		Aquidneck Agricultural Society, John J. Redham.	Newport, R. I	250	Do.
		Rhode Island Society for Increase of Domestic Industries, C. W. Smith.	Providence, R. I	250	Do.
Allen, Wm. V	Nebraska	Miscellaneous individuals	Miscellaneous addresses in Nebraska	2,85[illegible]	May 9, 1896
		Hon. Wm. V. Allen	Maltby Building, Washington, D. C	147	Do.
		Mr. Herman Frickie	Madison, Nebr	200	May 23, 1896
		Dr. C. E. Gossard	do	100	Do.
		Mr. Chas. Leatherly	Emerick, Nebr	100	Do.
		Hon. C. T. Muffley	Meadow Grove, Nebr	100	Do.
		Hon. F. J. Hale	Battle Creek, Nebr	100	Do.
		Hon. G. A. Luikart	Norfolk, Nebr	100	Do.
		Hon. Chas. Randall	Neuman Grove, Nebr	100	Do.
		Mr. Hans Dahlsten	Kalamazoo, Nebr	100	Do.
		Hon. Anthony Droulevy	Tilden, Nebr	100	Do.
Allison, W. B	Iowa	Hon. W. B. Allison	Committee on Appropriations, United States Senate, Washington, D. C.	187	May 12, 1896
		Miscellaneous individuals	Miscellaneous addresses in Iowa	2,813	Do.
		do	do	976	May 25, 1896
Abbott, Jo	Texas	do	Miscellaneous addresses in Texas	910	May 1, 1896
		Hon. Jo. Abbott	453 C street northwest, Washington, D. C	270	Do.
		do	334 C street northwest, Washington, D. C	1,000	May 21, 1896
Acheson, E. F	Pennsylvania	Hon. E. F. Acheson	Washington, Pa	3,000	May 11, 1896
		do	do	1,000	May 25, 1896
		do	do	484	May 28, 1896
Adams, Robert, jr	do	Hon. Robert Adams, jr	1415 H street northwest, Washington, D. C	3,000	May 4, 1896
		do	do	1,000	May 21, 1896
Aitken, D. D	Michigan	Miscellaneous individuals	Miscellaneous addresses in Michigan	2,900	May 14, 1896
		Hon. D. D. Aitken	407 C street southeast, Washington, D. C	100	Do.
		Miscellaneous individuals	Miscellaneous addresses in Michigan	10	May 20, 1896
		Hon. D. D. Aitken	407 C street southeast, Washington, D. C	1,000	May 22, 1896
Aldrich, J. Frank	Illinois	Hon. J. Frank Aldrich	Committee on Accounts, House of Representatives, Washington, D. C.	3,000	May 4, 1896
		do	do	1,000	May 23, 1896
Aldrich, W. F	Alabama	H. R. Wade	Hopeful, Ala	200	Apr. 29, 1896
		G. B. Deans	Calera, Ala	200	Do.

		H. G. Hornega	Selma, Ala	200	Do.
		Hon. W. F. Aldrich	Ebbitt House, Washington, D. C	400	Do.
		W. H. Cobb	Aldrich, Ala	200	Do.
		John A. McKinnon	Selma, Ala	200	Do.
		Geo. R. Mason	do	200	Do.
		J. W. Kitchens	Heflin, Ala	200	Do.
		J. L. Vandiver	Vandiver, Ala	200	Do.
		L. T. Smith	Anniston, Ala	200	Do.
		Judge R. M. Hunnicutt	Clanton, Ala	200	Do.
		J. J. Sims	Silver Run, Ala	200	Do.
		Rev. H. F. Carry	Talladega, Ala	200	Do.
		John P. Smith	Choccolocco, Ala	200	Do.
		Hon. W. F. Aldrich	Aldrich, Ala	1,000	May 21, 1896
Allen, C. E	Utah	Miscellaneous individuals	Miscellaneous addresses in Utah	2,774	May 9, 1896
		Hon. C. E. Allen	House of Representatives, Washington, D. C	226	Do.
		do	457 M street northwest, Washington, D. C	1,000	May 22, 1896
Allen, Jno. M	Mississippi	Hon. Jno. M. Allen	217 A street northeast, Washington, D. C	3,000	Apr. 27, 1896
		do	do	1,000	May 21, 1896
Anderson, W. C	Tennessee	Miscellaneous individuals	Miscellaneous addresses in Tennessee	585	May 2, 1896
		Hon. W. C. Anderson	412 Sixth street northwest, Washington, D. C	2,415	Do.
		do	Newport, Tenn	1,000	May 27, 1896
Andrews, W. E	Nebraska	Miscellaneous individuals	Miscellaneous addresses in Nebraska	1,992	May 12, 1896
		G. W. Barr	Spring Ranch, Nebr	25	May 19, 1896
		Mr. Oscar Calahan	Benkelman, Nebr	25	Do.
		J. S. West	do	50	Do.
		Mr. F. O. Marquissee	Palisade, Nebr	50	Do.
		Gen. A. V. Cole	Juniata, Nebr	50	Do.
		Hon. H. E. Norton	Kenesaw, Nebr	40	Do.
		Mr. L. S. Burson	Maywood, Nebr	40	Do.
		Dr. A. H. Thomas	Trenton, Nebr	40	Do.
		Mr. W. P. Davis	Roseland, Nebr	65	Do.
		Mr. L. M. Copeland	Minden, Nebr	65	Do.
		Mr. F. M. Merwin	Beaver City, Nebr	130	Do.
		Mr. F. Renner, jr	Hastings, Nebr	100	Do.
		Hon. E. D. Einsell	Holdrege, Nebr	87	Do.
		Rev. P. J. Brodine	do	60	Do.
		Mr. C. B. See	Elwood, Nebr	30	Do.
		Mr. J. J. Howe	Elsie, Nebr	35	Do.
		Miscellaneous individuals	Miscellaneous addresses in Nebraska	16	Do.
		Hon. Wm. E. Andrews	635 Maryland avenue northeast, Washington, D. C	100	Do.
		C. E. Hicks	Bladen, Nebr	50	May 25, 1896
		N. A. Pettygrove	Oxford, Nebr	50	Do.
		B. F. Hastings	Grant, Nebr	100	Do.
		J. B. Billings	Alma, Nebr	100	Do.
		J. H. Christner	Hays Center, Nebr	100	Do.
		John J. Lambern	Indianola, Nebr	100	Do.
		E. D. Einsell	Holdrege, Nebr	100	Do.
		H. A. Rowe	Imperial, Nebr	100	Do.
		F. C. Shroeder	Eustis, Nebr	100	Do.
		Fred. Renner	Hastings, Nebr	100	Do.
		L. M. Copeland	Minden, Nebr	100	Do.
		Miscellaneous individuals	Miscellaneous addresses in Nebraska	249	May 28, 1896
Apsley, L. D	Massachusetts	Hon. L. D. Apsley	1752 Q street, Washington, D. C	3,000	May 13, 1896

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Apsley, L. D	Massachusetts	Hon. L. D. Apsley	1752 Q street, Washington, D. C	1,000	May 25, 1896
Arnold, W. O	Rhode Island	Miscellaneous individuals	Miscellaneous addresses in Rhode Island	3,000	May 16, 1896
		do	do	11	May 20, 1896
		Hon. W. O. Arnold	Riggs House, Washington, D. C	1,000	May 25, 1896
Arnold, W. C	Pennsylvania	Hon. W. C. Arnold	The Varnum, Washington, D. C	889	May 9, 1896
		Miscellaneous individuals	Miscellaneous addresses in Pennsylvania	2,111	Do.
		Hon. W. C. Arnold	Hotel Varnum, Washington, D. C	1,000	May 22, 1896
Atwood, H. H	Massachusetts	Miscellaneous individuals	Miscellaneous addresses in Massachusetts	3,000	May 18, 1896
		Hon. H. H. Atwood	13 School street, Boston, Mass	1,000	May 22, 1896
Avery, John	Michigan	Miscellaneous individuals	Miscellaneous addresses in Michigan	2,617	May 15, 1896
		Hon. W. Irving Latimer	Big Rapids, Mich	50	Do.
		Hon. John Avery	House of Representatives, Washington, D. C	333	Do.
		do	201 North Capitol street, Washington, D. C	1,000	May 22, 1896
Bacon, A. O	Georgia	Hon. A. O. Bacon	Rooms 66 and 68, Maltby Building, Washington, D. C.	3,000	Apr. 23, 1896
		do	Room 66, Maltby Building, Washington, D. C	1,000	May 25, 1896
Baker, Lucien	Kansas	Hon. Lucien Baker	Committee to Investigate Trespasses, etc., United States Senate, Washington, D. C.	470	May 6, 1896
		Miscellaneous individuals	Miscellaneous addresses in Kansas	2,530	Do.
		Hon. Lucien Baker	Committee to Investigate Trespasses, etc., United States Senate, Washington, D. C.	1,000	May 21, 1896
Bate, Wm. B	Tennessee	Hon. Wm. B. Bate	Committee on Military Affairs, United States Senate, Washington, D. C.	3,000	Apr. 22, 1896
Berry, Jas. H	Arkansas	Hon. Jas. H. Berry	Care W. H. Hyatt, Bentonville, Ark	3,000	Apr. 27, 1896
		Hon. J. H. Berry	Bentonville, Ark	100	May 20, 1896
Blackburn, J. C. S	Kentucky	Hon. J. C. S. Blackburn	Room 71, Maltby Building, Washington, D. C	3,000	May 1, 1896
Blanchard, N. C	Louisiana	Miscellaneous individuals	Miscellaneous addresses in Louisiana	2,887	Apr. 27, 1896
		W. H. Barton	Houma, La	100	Do.
		Hon. N. C. Blanchard	Room 9, Maltby Building, Washington, D. C	23	Do.
		do	do	1,000	May 21, 1896
Brice, C. S	Ohio	Miscellaneous individuals	Miscellaneous addresses in Ohio	3,000	May 6, 1896
Brown, Arthur	Utah	do	Miscellaneous addresses in Utah	1,500	May 12, 1896
		J. M. Bolitho	Richfield, Utah	150	Do.
		U. H. Lyon	Murry, Utah	150	Do.
		A. Cazier	Nephi, Utah	150	Do.
		J. E. Robinson	Kanab, Utah	150	Do.
		J. H. Shafer	Moah, Utah	150	Do.
		E. J. Raddatz	Stockton, Utah	150	Do.
		J. T. Thorn	Pleasant Grove, Utah	150	Do.
		O. Thompson	Scipio, Utah	150	Do.
		R. E. Egan	Bountiful, Utah	150	Do.
		Chas. Morrill	Junction, Utah	150	Do.
		Miscellaneous individuals	Miscellaneous addresses in Utah	1,000	May 23, 1896
Burrows, J. C	Michigan	do	Miscellaneous addresses in Michigan	2,350	May 19, 1896

		U. S. Sheppard	South Allen, Mich	50	Do.
		Jesse Hamilton	Scotts, Mich	50	Do.
		Henry W. Rose	201 East Capitol street, Washington, D. C	150	Do.
		Fred. W. Utley	Grand Rapids, Mich	100	Do.
		Col. Wm. B. McCreary	Flint, Mich	100	Do.
		Fred Slocum	Cairo, Mich	100	Do.
		Hon. A. O. Wheeler	Manistee, Mich	100	Do.
		Miscellaneous individuals	Miscellaneous addresses in Michigan	101	May 23, 1896
		Hon. Augustus C. Cook	Iron Mountain, Mich	99	Do.
		Hon. O. B Fuller	Ford River, Mich	100	Do.
		Hon. C. D. Sheldon	Houghton, Mich	100	Do.
		Hon. J. K. Flood	Hart, Mich	100	Do.
		Harry K. Gustin	Alpena, Mich	100	Do.
		Hon. Richard Mason	Gladstone, Mich	100	Do.
		Hon. Peter Pasco	Republic, Mich	100	Do.
		Hon. O. W. Robinson	Chassell, Mich	100	Do.
		Hon. Eleazer Sherwood	St. Ignace, Mich	100	Do.
Butler, Marion	North Carolina	Miscellaneous individuals	Miscellaneous addresses in North Carolina	48	Apr. 23, 1896
		Hon. M. Butler	Committee on Drainage, Room 2, United States Senate, Washington, D. C.	2,952	Do.
		do	United States Senate, Washington, D. C	1,000	May 23, 1896
Babcock, J. W	Wisconsin	Hon. J. W. Babcock	11 B street northwest, Washington, D. C	3,000	May 13, 1896
		Miscellaneous individuals	Miscellaneous addresses in Wisconsin	1,000	May 25, 1896
		do	do	2,045	May 28, 1896
Bailey, J. W	Texas	do	Miscellaneous addresses in Texas	2,828	Apr. 23, 1896
		Hon. J. W. Bailey	House of Representatives, Washington, D. C	172	Do.
		do	do	1,000	May 28, 1896
Baker, Henry M	New Hampshire	Hon. Henry M. Baker	1411 F street, northwest, Washington, D. C	3,000	May 13, 1896
		do	do	1,000	May 22, 1896
Baker, Wm	Kansas	E. S. C. Foster, postmaster	Paradise, Russell County, Kans	48	May 6, 1896
		E. E. Powell	Macon, Wallace County, Kans	25	Do.
		P. Rinert	Tipton, Mitchell County, Kans	25	Do.
		Wm. Butler	Ruleton, Sherman County, Kans	25	Do.
		Luther Milton	Wallace, Wallace County, Kans	25	Do.
		Jno. K. Pangburn	Waldo, Russell County, Kans	25	Do.
		Jim Ewell	Sharon, Kans	25	Do.
		Geo. R. Allman	Wallace, Kans	25	Do.
		Wm. Ferguson	Phillipsburg, Kans	48	Do.
		The Goodland Republican	Goodland, Kans	25	Do.
		J. A. Hutt	Webber, Kans	90	Do.
		J. N. Taylor	Box 69, St. Francis, Kans	80	Do.
		Thos. Sturtevant	Formosa, Kans	100	Do.
		W. M. Kesler	Webber, Kans	100	Do.
		Geo. F. Holdren	Montrose, Kans	100	Do.
		Cliff. Darling	Randall, Kans	100	Do.
		D. P. McKellar	do	100	Do.
		Fred Lutz, postmaster	Beloit, Mitchell County, Kans	100	Do.
		Ben Sweet	Rubens, Kans	100	Do.
		Atwood Patriot	Atwood, Kans	100	Do.
		R. A. Cleland	Lovewell, Kans	100	Do.
		Abe Fraker	Wakeeney, Kans	100	Do.
		Harry Freeze	Hays, Kans	76	Do.
		F. M. Case	Stockton, Kans	76	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Baker, Wm	Kansas	The Liberator	Morton, Kans	50	May 6, 1896
		Long Island Leader	Long Island, Kans	50	Do.
		Wm. Lewis	Ludell, Kans	50	Do.
		Oberlin Herald	Oberlin, Decatur County, Kans	50	Do.
		Chas. Miller	Hays, Ellis County, Kans	50	Do.
		H. A. Turner	Portis, Osborne County, Kans	50	Do.
		E. C. Dickinson	Lebanon, Smith County, Kans	50	Do.
		Postmaster	Sylvangrove, Kans	50	Do.
		Jennings Echo	Jennings, Decatur County, Kans	50	Do.
		Postmaster	Beverly, Kans	50	Do.
		do	Bernard, Kans	50	Do.
		Dr. Alderson	Wilson, Kans	50	Do.
		W. L. Wright	Ellsworth, Kans	50	Do.
		C. P. Olson	Kensington, Smith County, Kans	50	Do.
		Miscellaneous individuals	Miscellaneous addresses in Kansas	682	Do.
		do	do	245	May 28, 1896
Baker, Wm. B	Maryland	do	Miscellaneous addresses in Maryland	2,253	May 11, 1896
		Hon. Wm. B. Baker	Care Wm. T. Page, file room, House of Representatives, Washington, D. C.	747	Do.
		do	do	1,000	May 25, 1896
Bankhead, J. H	Alabama	Hon. J. H. Bankhead	105 Maryland avenue northeast, Washington, D. C.	659	May 5, 1896
		Miscellaneous individuals	Miscellaneous addresses in Alabama	2,341	Do.
		do	do	1,000	May 25, 1896
		do	do	128	May 28, 1896
Barham, J. A	California	Ed. C. Barham	Santa Rosa, Cal	500	May 20, 1896
		A. W. Mackinder	St. Helena, Cal	100	Do.
		Gen. N. P. Chipman	Red Bluff, Cal	100	Do.
		Geo. F. King	Santa Rosa, Cal	100	Do.
		R. A. Poppe	Sonoma, Cal	100	Do.
		Stahle & Co	Santa Rosa, Cal	100	Do.
		Brush, Williams & Co	Cloverdale, Cal	100	Do.
		A. C. Lowell	Fort Bidwell, Cal	49	Do.
		A. Shane	Windsor, Cal	27	Do.
		Albert Brown	Mendocino City, Cal	51	Do.
		Fiegenbaum & Co	Rohnerville, Cal	51	Do.
		Adam Putnam	Ferndale, Cal	51	Do.
		Chas. E. Eastman	Fortuna, Cal	51	Do.
		M. P. Roberts	Arcata, Cal	51	Do.
		W. F. Fisher	Colistoga, Cal	51	Do.
		T. H. Johnson	Cedarville, Cal	51	Do.
		Robt. Nixon	Yreka, Cal	51	Do.
		Howard S. Fee	Cummings, Cal	26	Do.
		L. B. Frasier	Potter Valley, Cal	26	Do.
		C. Losekann	Redding, Cal	26	Do.

		John F. Wilsey	Sierro Valley, Cal	26	Do.
		W. H. McIlwaine	Trinity Center, Cal	26	Do.
		Solomon Otis	Beckwith, Cal	26	Do.
		C. C. Aubil	Adin, Cal	26	Do.
		J. W. Ryan	Scotia, Cal	25	Do.
		Benton Dohle	Garberville, Cal	25	Do.
		J. H. McCulloch	Cloverdale, Cal	25	Do.
		J. M. Melendy	Eureka, Cal	148	Do.
		Judge Hamm	Napa, Cal	148	Do.
		Fred W. Turner	Kenwood, Cal	150	Do.
		J. M. Marmon	Ukiah, Cal	150	Do.
		J. L. Dinwiddie	Petaluma, Cal	151	Do.
		J. W. Rose	Healdsburg, Cal	151	Do.
		L. C. Beckwith	Hydesville, Cal	50	Do.
		J. L. Childs	Crescent City, Cal	50	Do.
		Dr. Laird	Alturas, Cal	50	Do.
		Mr. Brown (merchant)	Burney Valley, Cal	50	Do.
		A. B. Aitkin	Corning, Cal	50	Do.
		Hon. J. A. Barham	Care Ed. C. Barham, Santa Rosa, Cal	1,000	May 22, 1896
Barney, S. S	Wisconsin	Hon. S. S. Barney	1631 Sixteenth street northwest, Washington, D. C.	3,000	May 13, 1896
		Miscellaneous individuals	Miscellaneous addresses in Wisconsin	1,000	May 27, 1896
Barrett, W. E	Massachusetts	Hon. W. E. Barrett	1014 Fifteenth street northwest, Washington, D. C.	3,000	May 15, 1896
		do	do	1,000	May 22, 1896
Bartholdt, R	Missouri	Hon. Richard Bartholdt	House of Representatives, Washington, D. C.	467	May 8, 1896
		Miscellaneous individuals	Miscellaneous addresses in Missouri	2,533	Do.
Bartlett, C. L	Georgia	do	Miscellaneous addresses in Georgia	2,800	Apr. 23, 1896
		Hon. C. L. Bartlett	The Cairo, Washington, D. C.	200	Do.
		Miscellaneous individuals	Miscellaneous addresses in Georgia	1,000	May 28, 1896
Bartlett, Franklin	New York	Hon. Franklin Bartlett	Committee on Appropriations, House of Representatives, Washington, D. C.	3,000	May 13, 1896
		do	do	1,000	May 22, 1896
Beach, C. B	Ohio	Hon. C. B. Beach	Care J. T. Suter, jr., 420 H street northwest, Washington, D. C.	3,000	May 1, 1896
Belknap, Hugh R	Illinois	Miscellaneous individuals	Miscellaneous addresses in Ohio	395	May 28, 1896
		Hon. Hugh R. Belknap	Committee on Railroads and Canals, House of Representatives, Washington, D. C.	500	May 11, 1896
		do	do	2,000	May 19, 1896
		do	Care Hon. Wm. Lorimer, House of Representatives, Washington, D. C.	500	Do.
Bell, C. K	Texas	Hon. C. K. Bell	453 C street northwest, Washington, D. C	425	Apr. 27, 1896
		Mr. J. L. L. McColl	Weatherford, Tex	250	Do.
		G. W. Riddle	Granbury, Tex	200	Do.
		Geo. W. Armstrong	Fort Worth, Tex	250	Do.
		County Judge of Coleman County	Coleman, Tex	200	Do.
		Judge John Main	Hamilton, Tex	200	Do.
		County Judge of Mills County	Goldthwaite, Tex	200	Do.
		Judge Drummond	Comanche, Tex	200	Do.
		Judge T. C. Taylor	Galesville, Tex	200	Do.
		County Judge of Lampasas County	Lampasas, Tex	200	Do.
		Judge Saddler	Glenrose, Tex	125	Do.
		Judge Thomas B. King	Stephenville, Tex	150	Do.
		Judge Chas. Rogan	Brownwood, Tex	200	Do.
		Judge C. H. Willinghouse	Ballinger, Tex	200	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Bell, C. K	Texas	County Judge of Somervell County	Glennrose, Tex	75	May 22, 1896
		County Judge of Hamilton County	Hamilton, Tex	75	Do.
		County Judge of Coleman County	Coleman, Tex	75	Do.
		County Judge of Lampasas County	Lampasas, Tex	75	Do.
		County Judge of Erath County	Stephenville, Tex	75	Do.
		County Judge of Parker County	Weatherford, Tex	75	Do.
		County Judge of Coryell County	Gatesville, Tex	75	Do.
		County Judge of Brown County	Brownwood, Tex	100	Do.
		County Judge of Runnels County	Ballinger Tex	100	Do.
		Judge G. W. Riddle	Granbury, Tex	100	Do.
		County Judge of Comanche County	Comanche, Tex	100	Do.
		County Judge of Mills County	Goldthwaite, Tex	75	Do.
Bell, John C	Colorado	Miscellaneous individuals	Miscellaneous addresses in Colorado	3,000	May 9, 1896
		do	do	98	May 20, 1896
		do	do	982	May 28, 1896
Bennett, C. G	New York	Hon. C. G. Bennett	Care *Robert Nimmo, 1157 Green avenue, Brooklyn, N. Y.*	*3,000*	*May 21, 1896*
		do	do	1,000	May 22, 1896
Berry, A. S	Kentucky	Hon. A. S. Berry	Care Shaler Berry, Newport, Ky	3,000	May 8, 1896
		do	do	1,000	May 21, 1896
		do	do	500	May 28, 1896
Bingham, H. H	*Pennsylvania*	*William G. Russell*	*Falls Church, Va*	380	May 9, 1896
		Samuel F. Houseman	424 South Broad street, Philadelphia, Pa	200	Do.
		William J. Pollock	734 South Seventeenth street, Philadelphia, Pa	200	Do.
		Hugh Black	1133 South Twenty-fourth street, Philadelphia, Pa	400	Do.
		Edw. S. Stewart	1538 South Broad street, Philadelphia, Pa	400	Do.
		P. A. McClain	Corner Third and Tasker streets, Philadelphia, Pa	400	Do.
		James L. Nobre	1223 Moyamensing avenue, Philadelphia, Pa	300	Do.
		James Spear	220 Greenwich street, Philadelphia, Pa	100	Do.
		Hon. H. H. Bingham	The Albany, Washington, D. C	600	Do.
		do	Care Wm. G. Russell, Falls Church, Va	1,000	May 23, 1896
Bishop, R. P	Michigan	Miscellaneous individuals	Miscellaneous addresses in Michigan	3,000	May 16, 1896
		do	do	1,000	May 25, 1896
Black, F. S	New York	do	Miscellaneous addresses in New York	1,099	May 19, 1896
Black, J. C. C	Georgia	do	Miscellaneous addresses in Georgia	2,945	*May 8, 1896*
		Hon. J. C. C. Black	House of Representatives, Washington, D. C	55	Do.
		Clerk superior court	Thomson, Ga	250	May 27, 1896
		do	Sandersville, Ga	250	Do.
		do	Louisville, Ga	250	Do.
		do	Sparta, Ga	250	Do.
Blue, R. W	Kansas	Hon. R. W. Blue	Care Hon. A. R. Greene, *1121 Fourteenth street* northwest, Washington, D. C.	*2,694*	*May 6, 1896*
		Miscellaneous individuals	Miscellaneous addresses in Kansas	306	Do.

		Hon. R. W. Blue	Care Hon. A. R. Greene, 1121 Fourteenth street northwest, Washington, D.C.	1,000	May 27, 1896
Boutelle, C. A	Maine	Miscellaneous individuals	Miscellaneous addresses in Maine	2,418	May 18, 1896
		Hon. C. A. Boutelle	House of Representatives, Washington, D. C	582	Do.
		Miscellaneous individuals	Miscellaneous addresses in Maine	1,000	May 27, 1896
Bowers, W. W	California	do	Miscellaneous addresses in California	661	May 20, 1896
		Hon. W. W. Bowers	1601 Thirtieth street northwest, Washington, D. C	2,339	Do.
Brewster, H. C	New York	Miscellaneous individuals	Miscellaneous addresses in New York	3,000	May 18, 1896
		Hon. H. C. Brewster	Care the Traders National Bank, Rochester, N. Y	800	May 27, 1896
		do	The Shoreham, Washington, D. C	200	Do.
Broderick, C	Kansas	Miscellaneous individuals	Miscellaneous addresses in Kansas	2,158	May 6, 1896
		Hon. Case Broderick	The Elsmere, Washington, D. C	842	Do.
		Miscellaneous individuals	Miscellaneous addresses in Kansas	355	May 28, 1896
		County clerk	Seneca, Kans	445	Do.
		do	Oneida, Kans	250	Do.
		do	Sabetha, Kans	250	Do.
		do	Reserve, Brown County, Kans	250	Do.
		do	Baileyville, Kans	250	Do.
Bromwell, J. H	Ohio	Hon. J. H. Bromwell	16 Masonic Temple, Cincinnati, Ohio	3,000	May 9, 1896
		do	do	1,000	May 21, 1896
Brosius, M	Pennsylvania	Miscellaneous individuals	Miscellaneous addresses in Pennsylvania	200	May 11, 1896
		Hon. M. Brosius	House of Representatives, Washington, D. C	2,800	Do.
		do	do	1,000	May 29, 1896
Brown, F. V	Tennessee	Miscellaneous individuals	Miscellaneous addresses in Tennessee	2,340	Apr. 27, 1896
		Hon. Foster V. Brown	Fredonia Hotel, Washington, D. C	660	Do.
		do	do	1,000	May 21, 1896
Brumm, C. N	Pennsylvania	Hon. C. N. Brumm	Committee on Claims, House of Representatives, Washington, D. C.	3,000	May 15, 1896
		do	do	1,000	May 22, 1896
Buck, C. F	Louisiana	Miscellaneous individuals	Miscellaneous addresses in Louisiana	2,282	May 7, 1896
Bull, Melville	Rhode Island	Hon. Melville Bull	Hamilton House, Washington, D. C	3,000	May 13, 1896
		do	do	1,000	May 22, 1896
Burrell, O	Illinois	Hon. O. Burrell	633 Maryland avenue northeast, Washington, D. C	3,000	May 5, 1896
		do	do	1,000	May 21, 1896
Burton, C. G	Missouri	Hon. C. G. Burton	209 A street southeast, Washington, D. C	3,000	May 8, 1896
		do	Care Hon. W. M. Treloar, 215 East Capitol street, Washington, D. C.	1,000	May 23, 1896
Burton, T. E	Ohio	Hon. T. E. Burton	Hotel Everett, Washington, D. C	3,000	Apr. 29, 1896
		do	do	1,000	May 22, 1896
		do	do	100	May 28, 1896
Caffery, D	Louisiana	Miscellaneous individuals	Miscellaneous addresses in Louisiana	1,800	Apr. 30, 1896
		Hon. D. Caffery	Maltby Building, Washington, D. C	1,200	Do.
Call, W	Florida	Hon. Wilkinson Call	Care J. E. Alexander, Deland, Fla	2,270	May 7, 1896
		Miscellaneous individuals	Miscellaneous addresses in Florida	730	Do.
		Hon. W. Call	Committee on Woman Suffrage, United States Senate, Washington, D. C.	1,000	May 22, 1896
Cameron, J. D	Pennsylvania	Miscellaneous individuals	Miscellaneous addresses in Pennsylvania	2,386	May 12, 1896
		Hon. J. D. Cameron	Committee on Naval Affairs, United States Senate, Washington, D. C.	614	Do.
		do	do	1,000	May 23, 1896
Cannon, F. J	Utah	Miscellaneous individuals	Miscellaneous addresses in Utah	1,656	May 11, 1896
		Hon. F. J. Cannon	Room 16, Maltby Building, Washington, D. C	754	Do.
		Mr. Neil Jacobson	Newton, Utah	300	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Cannon, F. J	Utah	Mrs. E. D. Garrison	Burbank, Utah	150	May 11, 1896
		Mr. L. G. Wade	Ogden, Utah	150	Do.
		Mr. John Gremer	Deweyville, Utah	150	May 23, 1896
		Mr. J. B. Sorensen	Redmond, Utah	160	Do.
		Mr. N. D. Jensen, president Mill Creek Agricultural Society.	Millcreek, Utah	201	Do.
		Miscellaneous individuals	Miscellaneous addresses in Utah	156	Do.
		Hon. F. J. Cannon	Room 16, Maltby Building, Washington, D. C	333	Do.
Carter, T. H	Montana	Hon. T. H. Carter	Room 10, Maltby Building, Washington, D. C	1,689	May 16, 1896
		Miscellaneous individuals	Miscellaneous addresses in Montana	1,311	Do.
		W. C. Whipps	Kalispel, Mont	400	May 27, 1896
		Hon. A. L. Love	Toston, Mont	300	Do.
		Hon. T. J. Lynde	Bozeman, Mont	300	Do.
Chandler, W. E	New Hampshire	Hon. W. E. Chandler	1421 I street northwest, Washington, D. C	3,000	May 13, 1896
		do	do	1,000	May 21, 1896
Chilton, H	Texas	Miscellaneous individuals	Miscellaneous addresses in Texas	2,959	May 12, 1896
		Hon. H. Chilton	Maltby Building, Washington, D. C	41	Do.
		Miscellaneous individuals	Miscellaneous addresses in Texas	1,000	May 27, 1896
Clark, C. D	Wyoming	do	Miscellaneous addresses in Wyoming	2,270	May 15, 1896
		Hon. C. D Clark	Committee on Railroads, 9 Terrace, United States Senate, Washington, D. C.	730	Do.
		do	Evanston, Wyo	151	May 27, 1896
		Miscellaneous individuals	Miscellaneous addresses in Wyoming	849	Do.
Cockrell, F. M	Missouri	Hon. F. M. Cockrell	1518 R street northwest, Washington, D. C	43	May 8, 1896
		Miscellaneous individuals	Miscellaneous addresses in Missouri	2,957	Do.
		do	do	495	May 28, 1896
		Judge Lafe Davison	Maryville, Mo	30	Do.
		Judge N. M. Pettingill	Memphis, Mo	30	Do.
		Judge John B. Butler	Milan, Mo	30	Do.
		Judge E. S. Garver	Grant City, Mo	30	Do.
		G Y. Gresham	Maryville, Mo	30	Do.
		Hon. W. E. Black	Gallatin, Mo	30	Do.
		Hon. W. N. Kennan	Mexico, Mo	30	Do.
		Col. M. G. Quinn	Columbia, Mo	30	Do.
		J. E. Walton	Shirley, Mo	47	Do.
		Judge C. R. Fowler	Edina, Mo	25	Do.
		R. C. Clark	Fayette, Mo	25	Do.
		Judge James G. Reed	Bowling Green, Mo	25	Do.
		T. B. Gannaway	Paris, Mo	25	Do.
		Judge G W. Lovelock	Richmond, Mo	25	Do.
Cullom, S. M	Illinois	Hon. S. M. Cullom	United States Senate, Washington, D. C	2,720	May 5, 1896
		Miscellaneous individuals	Miscellaneous addresses in Illinois	280	Do.
Calderhead, W. A	Knasas	do	Miscellaneous addresses in Kansas	316	May 6, 1896
		Hon. W. A. Calderhead	213 North Capitol street, Washington, D. C	2,684	Do.

		do	do	1,000	May 28, 1896
Cannon, J. G	Illinois	Miscellaneous individuals	Miscellaneous addresses in Illinois	2,200	May 5, 1896
		Hon. J. G. Cannon	Committee on Appropriations, House of Representatives, Washington, D. C.	350	Do.
		C. H. Warner, esq	Hoopeston, Ill	100	Do.
		James M. Stein, esq	Fairmount, Ill	50	Do.
		T. N. Buckinham	Potomac, Ill	50	Do.
		L. L. Irwin, esq	Rankin, Ill	50	Do.
		H. Goodwin, esq	Indianola, Ill	50	Do.
		M. N. Selby, esq	Muncie, Ill	50	Do.
		Wm. J. Boone, esq	Grape Creek, Ill	50	Do.
		Robt. W. Rogers, esq	Glenburn, Ill	50	Do.
		Hon. J. G. Cannon	Committee on Appropriations, House of Representatives, Washington, D. C.	1,000	May 21, 1896
Catchings, T. C	Mississippi	Miscellaneous individuals	Miscellaneous addresses in Mississippi	3,000	Apr. 27, 1896
		do	do	23	May 20, 1896
Chickering, C. A	New York	do	Miscellaneous addresses in New York	2,366	Do.
		Hon. C. A. Chickering	Copenhagen, N. Y	434	May 19, 1896
		Hon. Lewis P. Taylor	Oswego Center, N. Y	100	Do.
		Hon. T. M. Costello	Altmar, Oswego County, N. Y	100	Do.
		Hon. C. A. Chickering	Committee on Railroads and Canals, House of Representatives, Washington, D. C.	1,000	May 22, 1896
Clardy, J. D	Kentucky	Hon. J. D. Clardy	114 Maryland avenue northeast, Washington, D. C.	3,000	Apr. 29 1896
		do	do	1,000	May 22, 1896
Clark, C. N	Missouri	Miscellaneous individuals	Miscellaneous addresses in Missouri	1,189	May 7, 1896
		Hon. C. N. Clark	1 B street northwest, Washington, D. C	1,811	Do.
		do	do	1,000	May 21, 1896
Clark, S. M	Iowa	The Keokuk Anzeiger	Keokuk, Iowa	200	May 11, 1896
		The News	Salem, Iowa	200	Do.
		The Herald	Morning Sun, Iowa	200	Do.
		The Republican	Keosauqua, Iowa	200	Do.
		The Plaindealer	Fort Madison, Iowa	200	Do.
		Washington Press	Washington, Iowa	200	Do.
		The Mount Pleasant Journal	Mount Pleasant, Iowa	200	Do.
		Record-Republican	Wapella, Iowa	200	Do.
		The Fairfield Ledger	Fairfield Iowa	200	Do.
		The Burlington Hawk Eye	Burlington, Iowa	200	Do.
		The Enterprise	Birmingham, Iowa	200	Do.
		The Washington Gazette	Washington, Iowa	200	Do.
		Columbus Safeguard	Columbus Junction, Iowa	200	Do.
		The Beacon	Winfield, Iowa	200	Do.
		The Gate City	Keokuk, Iowa	200	Do.
Clarke, R. H	Alabama	Hon. R. H. Clarke	51 D street southeast, Washington, D. C	3,000	Apr 23, 1896
		do	do	1,000	May 25, 1896
Cobb, S. W	Missouri	Miscellaneous individuals	Miscellaneous addresses in Missouri	1,800	May 15, 1896
		Hon. S. W. Cobb	House of Representatives, Washington, D. C	1,200	Do.
		do	do	1,000	May 23, 1896
Cobb, J. E	Alabama	Hon. J. E. Cobb	Tuskegee, Ala	1,761	Apr. 23, 1896
		Miscellaneous individuals	Miscellaneous addresses in Alabama	1,239	Do.
Cockrell, J. V	Texas	do	Miscellaneous addresses in Texas	3,982	May 4, 1896
		Hon. J. V. Cockrell	27 M street northwest, Washington, D. C	18	Do.
		Miscellaneous individuals	Miscellaneous addresses in Texas	1,000	May 27, 1896
Codding, J. H	Pennsylvania	Hon. J. H. Codding	834 Thirteenth street northwest, Washington, D. C.	3,000	May 2, 1896

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Coffin, C. E	Maryland	Hon. C. E. Coffin	Muirkirk, Md	2,887	May 7, 1896
		Miscellaneous individuals	Miscellaneous addresses in Maryland	112	Do.
Colson, D. G	Kentucky	do	Miscellaneous addresses in Kentucky	2,977	May 9, 1896
		Hon D. G. Colson	House of Representatives, Washington, D. C	23	Do
		do	924 Fourteenth street northwest, Washington, D. C	1,000	May 22, 1896
Connolly, J. A	Illinois	Miscellaneous individuals	Miscellaneous addresses in Illinois	3,000	May 5, 1896
		Hon J. A. Connolly	The Shoreham, Washington, D. C	300	May 20, 1896
		Sangamon County poor farm	Buffalo, Ill	60	May 28, 1896
		Miscellaneous individuals	Miscellaneous addresses in Illinois	940	Do.
Cooke, E. D	do	Hon. E. D Cooke	Willards Hotel, Washington, D. C	3,000	May 19, 1896
		C. W. Andrews	124 Lincoln avenue, Chicago, Ill	250	May 28, 1896
		Chas. Catlin	480 Belden avenue, Chicago, Ill	250	Do.
		H. D. Bean	780 Sedgewick street, Chicago, Ill	250	Do.
		Kelso Farley	724 Winthrop avenue, Chicago, Ill	250	Do.
Cook, S. A	Wisconsin	Miscellaneous individuals	Miscellaneous addresses in Wisconsin	260	May 15, 1896
		Hon. S. A. Cook	1415 Massachusetts avenue northwest, Washington, D. C.	2,740	Do.
		do	do	2,219	May 28, 1896
		Miscellaneous individuals	Miscellaneous addresses in Wisconsin	581	Do.
Cooper, C. M	Florida	do	Miscellaneous addresses in Florida	3,000	May 1, 1896
		do	do	251	May 28, 1896
		Hon. C. M. Cooper	Care C. C. Baldwin, 816 Eighteenth street, Washington, D. C.	200	Do.
Cooper, H. A	Wisconsin	Hon. H. A. Cooper	Willards Hotel, Washington, D. C	2,828	May 19, 1896
		Miscellaneous individuals	Miscellaneous addresses in Wisconsin	172	Do.
		do	do	1,000	May 20, 1896
		Hon. H. A. Cooper	Willards Hotel, Washington, D. C	1,000	May 28, 1896
Cooper, S. B	Texas	Miscellaneous individuals	Misscellaneous addresses in Texas	3,000	May 7, 1896
		do	do	893	May 28, 1896
Corliss, J. B	Michigan	do	Miscellaneous addresses in Michigan	3,000	May 15, 1896
		do	do	1,000	May 22, 1896
Cowen, Jno. K	Maryland	Hon. Jno. K. Cowen	250 Delaware avenue, Washington, D. C	2,000	May 12, 1896
		do	House of Representatives, Washington, D. C	1,000	Do.
Cox, N. N	Tennessee	Hon. N. N. Cox	Hotel Varnum, Washington, D. C	106	Apr. 27, 1896
		Miscellaneous individuals	Miscellaneous addresses in Tennessee	2,894	Do.
		do	do	416	May 25, 1896
Crisp, C. F	Georgia	do	Miscellaneous addresses in Georgia	2,218	Apr 23, 1896
		Hon. C. F. Crisp	Metropolitan Hotel, Washington, D. C	782	Do.
		do	do	1,000	May 22, 1896
Crowley, Miles	Texas	Hon. Miles Crowley	House of Representatives, Washington, D. C	3,000	Apr 23, 1896
		do	1538 I street northwest, Washington, D. C	1,000	May 22, 1896
Crowther, G. C	Missouri	Miscellaneous individuals	Miscellaneous addresses in Missouri	3,000	May 7, 1896
		do	do	40	May 28, 1896
		Judge W. M. Price	Elm Grove, Mo	50	Do.

		J. A. Walker	Rushville, Mo	50	Do.
		Ed. J. Kellogg	Craig, Mo	42	Do.
		Vine Haney	Forest City, Mo	60	Do.
		Jacob Book	Fortescue, Mo	96	Do.
		Deacon Brown	Bigelow, Mo	102	Do.
		L. C. Huff	Halls, Mo	100	Do.
		E. H. Bullock, M. D	Nodaway, Mo	100	Do.
		T. W. Dege	Corning, Mo	100	Do.
		Geo. R. Jones	Phelps City, Mo	100	Do.
		M. F. Hackett	Watson, Mo	100	Do.
		Jack Clemmans	Amazonia, Mo	100	Do.
Cousins, R. G	Iowa	Hon. R. G. Cousins	56 B street northeast, Washington, D. C	1,449	May 8, 1896
		Miscellaneous individuals	Miscellaneous addresses in Iowa	1,551	Do.
		J. L. Yowell	Atkins, Iowa	50	May 25, 1896
		Thos. Buck	Watkins, Iowa	50	Do.
		D. C. Knupp	Dysart, Iowa	50	Do.
		Frank Tasker	Wyoming, Iowa	50	Do.
		H. S. Thomas	Green Mountain, Iowa	50	Do.
		Geo. F. Moulton	Mount Auburn, Iowa	50	Do.
		L. B. Goodrich	State Center, Iowa	100	Do.
		C. W. Reynolds	Grundy Center, Iowa	100	Do.
		A. H. Wilson	Homer, Iowa	50	Do.
		Andrew Robinson	Garrison, Iowa	50	Do.
		L. B. Christman	Springville, Iowa	50	Do.
		Wm. Stookey	Shellsburg, Iowa	50	Do.
		J. B. McCormick	St. Anthony, Iowa	50	Do.
		J. C. Myers	Liscomb, Iowa	50	Do.
		J. R. Gowdy	Laurel, Iowa	50	Do.
		E. E. Hale	Marietta, Iowa	50	Do.
		Thos. Mooney	Gilman, Iowa	50	Do.
		J. R. McBrown	Laurel, Iowa	50	Do.
Crump, R. O	Michigan	Hon. R. O. Crump	201 North Capitol street, Washington, D. C	437	May 19, 1896
		W. C. Clark	West Bay City, Mich	30	Do.
		A. R. Babcock	West Branch, Mich	30	Do.
		E. T. Bennett	Bay City, Mich	31	Do.
		H. C. Hamill	Alpena, Mich	100	Do.
		Hon. R. O. Crump	201 North Capitol street, Washington, D. C	1,000	May 22, 1896
		Miscellaneous individuals	Miscellaneous addresses in Michigan	2,352	May 19, 1896
Culberson, D. B	Texas	Hon. D. B. Culberson	House of Representatives, Washington, D. C	1,500	May 7, 1896
		do	do	1,500	May 11, 1896
		do	do	1,000	May 21, 1896
Cummings, A. J	New York	Hon. A. J. Cummings	51 D Street southeast, Washington, D. C	3,000	May 13, 1896
		do	do	1,000	May 22, 1896
Curtis, Chas	Kansas	Miscellaneous individuals	Miscellaneous addresses in Kansas	3,000	May 6, 1896
		do	do	200	May 28, 1896
Curtis, G. M	Iowa	Hon. G. M. Curtis	Hotel Normandie, Washington, D. C	3,000	May 2, 1896
		Miscellaneous individuals	Miscellaneous addresses in Iowa	1,000	May 25, 1896
Curtis, N. M	New York	Postmaster	Hermon, N. Y	26	May 19, 1896
		do	Norwood, N. Y	35	Do.
		do	Messena, N. Y	35	Do.
		do	Madrid, N. Y	35	Do.
		do	Russell, N. Y	35	Do.
		do	Brasher Falls, N. Y	30	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Curtis, N. M	New York	Postmaster	Colton, N. Y	30	May 19, 1896
		do	Dekalb, N. Y	30	Do.
		do	Hammond, N. Y	30	Do.
		do	Lawrenceville, N. Y	30	Do.
		do	Waddington, N. Y	30	Do.
		do	Lisbon, N. Y	40	Do.
		do	Waterford, N. Y	40	Do.
		do	Stillwater, N. Y	40	Do.
		do	Ballston, N. Y	45	Do.
		do	Mechanicsville, N. Y	45	Do.
		do	Schuylerville, N. Y	45	Do.
		do	Mayfield, N. Y	45	Do.
		do	Ephratah, N. Y	45	Do.
		do	Northville, N. Y	45	Do.
		do	Johnstown, N. Y	50	Do.
		do	Gloversville, N. Y	50	Do.
		do	Broadalbin, N. Y	50	Do.
		do	Saratoga Springs, N. Y	50	Do.
		do	Canton, N. Y	60	Do.
		do	Ogdensburg, N. Y	60	Do.
		do	Potsdam, N. Y	60	Do.
		do	Gouveneur, N. Y	60	Do.
		Miscellaneous individuals	Miscellaneous addresses in New York	1,824	Do.
		do	do	1,000	May 28, 1896
Catron, T. B	New Mexico	do	Miscellaneous addresses in New Mexico	3,000	Apr. 27, 1896
		do	do	880	May 20, 1896
		do	do	1,000	May 25, 1896
		do	do	177	May 28, 1896
Daniel, J. W	Virginia	do	Miscellaneous addresses in Virginia	2,900	May 8, 1896
		Hon. Jno. W. Daniel	Room 11, Terrace, United States Senate, Washington, D. C.	100	Do.
		do	do	1,000	May 23, 1896
Davis, C. K	Minnesota	Miscellaneous individuals	Miscellaneous addresses in Minnesota	2,284	May 19, 1896
		S. O. Morse	Slayton, Minn	50	Do.
		H. Wadsworth	Glencoe, Minn	50	Do.
		Hon. Frank A. Day	Fairmont, Minn	200	Do.
		Hon. C. K. Davis	Territorial Committee, United States Senate, Washington, D. C.	416	Do.
		do	do	1,000	May 23, 1896
Dubois, F. T	Idaho	Joe White	Shoshone, Idaho	100	May 20, 1896
		Bishop Jardine	Louisville, Idaho	100	Do.
		Elmore County Republican	Mountainhouse, Idaho	100	Do.
		Gus Sporgberg	Paris, Idaho	100	Do.
		Weiser Signal, D. Lockwood	Weiser, Idaho	100	Do.

		A. McIntosh	Montpelier, Idaho	100	Do.
		W. Bassett	Gentile Valley, Idaho	100	Do.
		T. E. Picotle	Hailey, Idaho	100	Do.
		L. C. Eastman	Soda Springs, Idaho	100	Do.
		C. E. Arney	Pocatello, Idaho	100	Do.
		Busy Bee	Albion, Idaho	150	Do.
		J. P. Quarles	Rathdrum, Idaho	150	Do.
		Jake Horn	Caldwell, Idaho	200	Do.
		A. J. McDonald	Moscow, Idaho	200	Do.
		Ben E. Rich	St. Anthony, Idaho	200	Do.
		M. F. Cowley	Preston, Idaho	300	Do.
		Hon. F. T. Dubois	United States Senate, Washington, D. C	100	Do.
		M. Patric	Market Lake, Idaho	150	Do.
		Wm. E. Wheeler	Idaho Falls, Idaho	150	Do.
		Geo. Wall	Blackfoot, Idaho	150	Do.
		Miscellaneous individuals	Miscellaneous addresses in Idaho	250	Do.
		Hon. F. T. Dubois	Committee on Public Lands, United States Senate, Washington, D. C.	1,000	May 23, 1896
Dalzell, John	Pennsylvania	Miscellaneous individuals	Miscellaneous addresses in Pennsylvania	1,359	May 12, 1896
		Hon. John Dalzell	1605 New Hampshire avenue, Washington, D. C.	1,641	Do.
		do	do	1,000	May 22, 1896
Danford, L	Ohio	O. P. Mason	Bellaire, Ohio	692	May 14, 1896
		D. S. Adams	Maynard, Ohio	25	Do.
		M. Overbaugh	St. Clairsville, Ohio	54	Do.
		Riley Bros	do	35	Do.
		Mr. Sam. Jackson	do	72	Do.
		J. W. Russell	Eastview, Jefferson County, Ohio	105	Do.
		Mr. John C. Michner	Ladyville, Ohio	187	Do.
		Mr. John Pollock	St. Clairsville, Ohio	190	Do.
		Hon. L. Danford	House of Representatives, Washington, D. C	937	Do.
		Miscellaneous individuals	Miscellaneous addresses in Ohio	703	Do.
		Hon. L. Danford	House of Representatives, Washington, D. C	1,000	May 21, 1896
Daniels, Chas	New York	Hon. Seth Flenner	East Aurora, N. Y	78	May 20, 1896
		C. W. Ticknor, school commissioner	Springfield, N. Y	78	Do.
		O. J. Gardner	Willink, N. Y	78	Do.
		John F. Havens	Wales, N. Y	78	Do.
		Frank Hatch	East Elmer, N. Y	78	Do.
		Miles Wasson	West Seneca, N. Y	78	Do.
		Royal Gould	Big Tree, N Y	78	Do.
		Robert Zimmerman	Tonawanda, N. Y	78	Do.
		F. N. Bell	Akron, N. Y	78	Do.
		I. V. Eckerson, school commissioner	do	78	Do.
		Geo. W. Briggs	Orchard Park, N. Y	78	Do.
		Solon J. Ryther	Eden, N. Y	78	Do.
		Wm. B. Jackson	Corner Hill and Main streets, Holland, N. Y	78	Do.
		N. T. Hurd	Pontiac, N. Y	78	Do.
		Chas. Buffam	Marilla, N. Y	78	Do.
		John C. Robbins	Lake View, N. Y	78	Do.
		Dr. A. D. Pierce	North Boston, N. Y	78	Do.
		Seneca W. Ackley	South Wales, N. Y	78	Do.
		Christian Schwinger	Tonawanda, N. Y	78	Do.
		Frank Phelps	North Evans, N. Y	78	Do.
		Richard Humphroy	1858 Niagara street, Buffalo, N. Y	75	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Daniels, Chas	New York	Ottomar Reinecke, esq	296 Ellicott street, Buffalo, N. Y	150	May 20, 1896
		Miscellaneous individuals	Miscellaneous addresses in New York	95	Do.
		W. J. Sloane	Ebenezer, N. Y	80	Do.
		Wm. H. Ryneck	Angola, N. Y	80	Do.
		Herman Wrightman	Clarksburg, N. Y	80	Do.
		F. C. Dennison	Marilla, N. Y	80	Do.
		Hon. J. W. Carter	Eden Valley, N. Y	80	Do.
		James Ryther, school commissioner	West Seneca, N. Y	80	Do.
		Ernest Hubbard	Water Valley, N. Y	80	Do.
		A. H. Tilton	Spring Brook, N. Y	80	Do.
		James Ayer	Evans, N. Y	80	Do.
		James M. Frost	North Evans, N. Y	80	Do.
		Hon. H. M. Blasdell	North Collins, N. Y	80	Do.
		E. J. Howland	South Buffalo, N. Y	80	Do.
		Hon. Geo. W. Carr	Derby, N. Y	80	Do.
		J. C. Reed	South Newstead, N. Y	80	Do.
		Miscellaneous individuals	Miscellar ous addresses in New York	950	May 27, 1896
		Ottomar Reinecke	296 Ellicott street, Buffalo, N. Y	50	Do.
		Hon. Edgar B. Jewett	Buffalo, N. Y	2,000	May 28, 1896
Dayton, A. G	West Virginia	Miscellaneous individuals	Miscellaneous addresses in West Virginia	3,000	May 7, 1896
		Hon. A. G. Dayton	Care Frank J. Owen, Phillippi, Bourbon County, W. Va.	1,000	May 21, 1896
De Armond, D. A	Missouri	Hon. D. A. De Armond	226 New Jersey avenue southeast, Washington, D.C.	3,000	May 4, 1896
		Miscellaneous individuals	Miscellaneous addresses in Missouri	1,000	May 25, 1896
De Witt, F. B	Ohio	John H. Schrider	Bryan, Ohio	460	May 12, 1896
		C. P. Godfrey	Ottowa, Ohio	266	Do.
		Hon. F. B. De Witt	House of Representatives, Washington, D. C	82	Do.
		W. H. McClintock	Defiance, Ohio	495	Do.
		W. S. Johnson	Van Wert, Ohio	507	Do.
		T. C. Clewell	Napoleon, Ohio	460	Do.
		Miscellaneous individuals	Miscellaneous addresses in Ohio	730	Do.
		Dr. Crooks	Convoy, Ohio	50	May 28, 1896
		Hon. F. A. Huffman	Ohio City, Ohio	50	Do.
		H. B. Rose	Continental, Ohio	100	Do.
		E. B. Walkup	Delphos, Ohio	100	Do.
		M. B. Everett	Payne, Ohio	100	Do.
		James Coulter	Hicksville, Ohio	100	Do.
		Hon. J. W. Williams	Montpelier, Ohio	100	Do.
		Hon. John Voght	Deshler, Ohio	100	Do.
		C. C. Young	Liberty Center, Ohio	100	Do.
		Dr. Bigg	Columbus Grove, Ohio	100	Do.
		Tribune	Leipsic, Ohio	100	Do.
Denny, W. M	Mississippi	Miscellaneous individuals	Miscellaneous addresses in Mississippi	3,000	Apr. 30, 1896

		do	do	1,000	May 25, 1896
		do	do	56	May 28, 1896
Dingley, N., jr	Maine	do	Miscellaneous addresses in Maine	3,000	May 18, 1896
		do	do	180	May 20, 1896
		Hon. N. Dingley	Committee on Ways and Means, House of Representatives, Washington, D. C.	1,000	May 22, 1896
Dinsmore, H. A	Arkansas	Miscellaneous individuals	Miscellaneous addresses in Arkansas	3,000	Apr. 29, 1896
		do	do	272	May 7, 1896
		do	do	1,000	May 25, 1896
Dockery, A. M	Missouri	do	Miscellaneous addresses in Missouri	2,917	May 7, 1896
		Hon. A. M. Dockery	Willard's Hotel, Washington, D. C	83	Do.
		Miscellaneous individuals	Miscellaneous addresses in Missouri	1,000	May 27, 1896
Dolliver. J. P	Iowa	do	Miscellaneous addresses in Iowa	2,731	May 9, 1896
		Hon. J. P. *Dolliver*	Committee on Ways and Means, Washington, D. C.	269	Do.
		do	Fort Dodge, Iowa	1,000	May 22, 1896
Doolittle, W. H	Washington	Hon. W. H. Doolittle	Room 40, Willard's Hotel, Washington, D. C	3,000	May 20, 1896
		do	do	1,000	May 21, 1896
Dovener, B. B	West Virginia	Hon. B. B. Dovener	Willard's Hotel, Washington, D. C	1,781	May 11, 1896
		Miscellaneous individuals	Miscellaneous addresses in West Virginia	1,219	Do.
		do	do	228	May 20, 1896
		Hon. B. B. Dovener	Willard's Hotel, Washington, D. C	1,000	May 27, 1896
Downing, F. E	Illinois	Hon. F. E. *Downing*	Virginia, Ill	3,000	May 5, 1896
		do	do	1,000	May 25, 1896
Draper, W. F	Massachusetts	Mary E. Cutler	Holliston Grange, Holliston, Mass	25	May 19, 1896
		Bellingham Grange	Bellingham, Mass	25	Do.
		Hyde Park Horticultural Society	Hyde Park, Mass	25	Do.
		W. I. Furbush	Attleboro Falls, Mass	25	Do.
		Miscellaneous individuals	Miscellaneous addresses in Massachusetts	156	Do.
		Hon. Wm. F. Draper	1601 K street, Washington, D. C	344	Do.
		E. J. Whitaker	Wrentham, Mass	100	Do.
		Allen F. Smith	Dover, Mass	100	Do.
		Moses C. Adams	Willis, Mass	100	Do.
		Hon. Robt. S. Gray	Walpole, Mass	100	Do.
		Silas E. Fales	Norfolk, Mass	100	Do.
		Chas. T. Light	Hyde Park, Mass	100	Do.
		Friend P. Carpenter	Foxboro, Mass	100	Do.
		Henry D. Humphrey	Dedham, Mass	100	Do.
		Hon. Wm. F. Ray	Franklin, Mass	100	Do.
		Oliver H. Green	Sharon, Mass	100	Do.
		G. Eugene Fisher	Attleboro, Mass	100	Do.
		Jos. H. Cullis	Waverly, Mass	100	Do.
		Daniel S. Woodman	West Medway, Mass	100	Do.
		Geo. A. Adams	Needham, Mass	100	Do.
		J. H. L. Coon	Watertown, Mass	100	Do.
		F. J. Dutcher	Hopedale, Mass	100	Do.
		N. B. *Douglas*	Sherborn, Mass	100	Do.
		Wendell Williams	Milford, Mass	100	Do.
		Leslie C. Wead	Brookline, Mass	100	Do.
		Edward Sands	Newton, Mass	100	Do.
		Henry A. Whitney	Bellingham, Mass	100	Do.
		W. H. Smart	Holliston, Mass	100	Do.
		William Crane	Medfield, Mass	100	Do.
		Francis O. Winslow	Norwood, Mass	100	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post office address.	Number of mail packages.	Date.
Draper, W. F	Massachusetts	Hon. W. F. Draper	Committee on Patents, House of Representatives, Washington, D. C.	1,000	May 22, 1896
Elkins, S. B	West Virginia	Hon. S. B. Elkins	Room 44, Maltby Building, Washington, D. C	3,000	May 1, 1896
		do	do	1,000	May 21, 1896
Eddy, F. M	Minnesota	Hon. F. M. Eddy	Glenwood, Minn	619	May 19, 1896
		Miscellaneous individuals	Miscellaneous addresses in Minnesota	2,381	Do.
		Hon. Frank M. Eddy	201 A street southeast, Washington, D. C	1,000	May 22, 1896
Ellett, T	Virginia	Hon. T. Ellett	The Cairo, Washington, D. C	1,191	May 8, 1896
		R. Surry Valentine	Office T. Ellett, Richmond, Va	200	Do.
		Miscellaneous individuals	Miscellaneous addresses in Virginia	1,609	Do.
		do	do	1,717	May 20, 1896
		do	do	1,000	May 22, 1896
		do	do	1,007	May 28, 1896
Elliott, Wm	South Carolina	do	Miscellaneous addresses in South Carolina	2,900	Apr. 23, 1896
		Hon. Wm. Elliott	1224 Fifteenth street northwest, Washington, D. C.	100	Do.
		Postmaster	Fowler, S. C	100	May 27, 1896
		do	Vox, S. C	100	Do.
		do	Epps, S. C	100	Do.
		do	Coxey, S. C	100	Do.
		do	Cooper, S. C	100	Do.
		do	Benson, S. C	100	Do.
		do	Trio, S. C	100	Do.
		do	Heinerman, S. C	100	Do.
		Wm. Middleton	Dale, S. C	50	Do.
		Wm. Lawrence	Seabrooke, S. C	50	Do.
		Nat. Tripp	Sheldon, S. C	25	Do.
		Harvey Jones	do	25	Do.
		Bucley Legard	do	25	Do.
		Cyrus Robinson	do	25	Do
Ellis, W. R	Oregon	Hon. W. R. Ellis	Committee on Expenditures in Department of Justice, House of Representatives, Washington, D. C.	3,000	May 20, 1896
		do	House of Representatives, Washington, D. C	1,000	May 25, 1896
Erdman, C. J	Pennsylvania	Peter R. Bear, esq	Fogelsville, Pa	75	May 12, 1896
		Hon. Frank B. Heller	Standard, Pa	75	Do.
		Thomas Reidard	Guths Station, Pa	75	Do
		Silas Croll	Trexlertown, Pa	75	Do
		H. C. C. Roeder, esq	Hosensack, Pa	75	Do.
		D. K. Kellar, esq	Alburtis, Pa	75	Do.
		Emanuel Nieber, esq	Limeport, Pa	75	Do.
		Wm. J. Krause, esq	New Tripoli, Pa	100	Do.
		David Nister, esq	Mickleys, Pa	100	Do.
		Cyrus Fox	Reading, Pa	100	Do.
		Wm. H. Snyder, esq	Center Valley, Pa	100	Do.

		Sol. F. Roupt, esq	Seipstown, Pa	100	Do.
		Dr. Bean	Mountainville, Pa	100	Do.
		Cornelius Acker, esq	Rittersville, Pa	125	Do.
		Joseph Kuchus, esq	Macungie, Pa	125	Do.
		Daniel Thomas	Slatington, Pa	50	Do.
		Frank P. Faust	Claussville, Pa	50	Do.
		F. J. Diefenderfer	Allentown, Pa	500	Do.
		Thos. E. Haak	Womelsdorf, Pa	650	Do.
		Hon. C. J. Erdman	Metropolitan Hotel, Washington, D. C	375	Do.
		do	Care of Thos. F. Diefenderfer, Allentown, Pa	1,000	May 22, 1896
Evans, Walter	Kentucky	Miscellaneous individuals	Miscellaneous addresses in Kentucky	3,000	May 7, 1896
		Hon. W. Evans	Louisville, Ky	1,000	May 22, 1896
Faulkner, C. J	West Virginia	Hon. C. J. Faulkner	Room 61, Maltby Building, Washington, D. C	129	May 13, 1896
		J. L. Bathburn	Patrick, W. Va	85	Do.
		Miscellaneous individuals	Miscellaneous addresses in West Virginia	321	Do.
		M. V. Brown	Buffalo, W. Va	85	Do.
		G. G. Jacod	West Liberty, W. Va	85	Do.
		W. L. Swope	Rockcamp, W. Va	85	Do.
		David A. Beard	Martinsburg, W. Va	85	Do.
		C. H. Knott	Molers, W. Va	85	Do.
		Miss Maggie Beard	Southside, W. Va	85	Do.
		Jno. Somerville	Auburn, W. Va	85	Do.
		Labau Moore	Belington, W. Va	85	Do.
		Geo. W. Cushwa	Martinsburg, W. Va	85	Do.
		Geo. E. Skinner	Pliny, W. Va	85	Do.
		H. H. Slaven	Greenville, W. Va	85	Do.
		Mrs. F. O. Comstock	Hugo, W. Va	85	Do.
		J. F. Conaway	Barracksville, W. Va	85	Do.
		David Bonar	Wells, W. Va	85	Do.
		Geo. H. Spencer	Springmills, W. Va	85	Do.
		L. A. Leckwith	Lubeck, W. Va	85	Do.
		E. W. Roush	Sassafras, W. Va	85	Do.
		J. W. Sperow	Martinsburg, W. Va	85	Do.
		Mrs. Tennant	Stotlers Crossroads, W. Va	85	Do.
		H. S. Reed	Lawford, W. Va	85	Do.
		E. S. Tabler	Beddington, W. Va	85	Do.
		Judson Skaggs	Wolfcreek, W. Va	85	Do.
		F. F. Higginbotham	Buffalo, W. Va	85	Do.
		Milton Barr	Shenandoah Junction, W. Va	85	Do.
		M. L. Brannon	Glenville, W. Va	85	Do.
		T. P. Perry	Ravenswood, W. Va	85	Do.
		G. C. Gist	Wellsburg, W. Va	85	Do.
		B. W. Kanode	Rippon, W. Va	85	Do.
		Mrs. Dr. S. T. Knott	Molers, W. Va	85	Do.
		Miscellaneous individuals	Miscellaneous addresses in West Virginia	55	May 28, 1896
Frye, Wm. P	Maine	do	Miscellaneous addresses in Maine	2,913	May 18, 1896
		Hon. Wm. P. Frye	Committee on Commerce, United States Senate, Washington, D. C.	87	Do.
		do	do	1,000	May 22, 1896
Fairchild, B. L	New York	Miscellaneous individuals	Miscellaneous addresses in New York	253	May 18, 1896
		C. S. McClellan	Mount Vernon, N. Y	125	Do.
		Jno. H. Behrmann	Williamsbridge, N. Y	100	Do.
		Hon. B. L. Fairchild	The Cairo, Washington, D. C	2,000	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Fairchild, B. L	New York	Rev. A. A. Lings, D. D	Yonkers, N. Y	25	May 20, 1896
		Miscellaneous individuals	Miscellaneous addresses in New York	6	Do.
		do	do	614	May 28, 1896
		Hon. B. L. Fairchild	The Cairo, Washington, D. C	386	Do.
		do	do	500	June 6, 1896
Faris, G. W	Indiana	Hon. G. W. Faris	208 A street southeast, Washington, D. C	3,000	May 1, 1896
		James H. Pierce, captain police	Terre Haute, Ind	50	May 23, 1896
		Messrs. Bauermeister & Busch	do	50	Do.
		Mr. Jos. Harper	Prairie Creek, Ind	50	Do.
		Mr. John W. McCoskey	Youngstown, Ind	50	Do.
		Mr. James P. Veach	765 Lafayette avenue, Terre Haute, Ind	50	Do.
		Fred. Faust	1225 North Seventh street, Terre Haute, Ind	50	Do.
		Mr. W. S. Burgan	Glen, Ind	50	Do.
		Mining Co.'s store	Fontanet, Ind	50	Do.
		Messrs. Shickel & Johnson	Sandford, Ind	50	Do.
		Mr. Nelson Record	Terre Haute, Ind	50	Do.
		Mr. John W. Minnick	New Goshen, Ind	25	Do.
		Mr. Bentley	Prairieton, Ind	25	Do.
		Mr Haworth, merchant	Asherton, Ind	25	Do.
		Mr. H. H. Infange	Prairieton, Ind	25	Do.
		Mr. Richard McIlroy	Macksville, Ind	25	Do.
		W. W. Casto	do	25	Do.
		Mr. Lewis H. Rhyan	New Goshen, Ind	25	Do.
		Miscellaneous individuals	Miscellaneous addresses in Indiana	325	Do.
Fenton, L. J	Ohio	do	Miscellaneous addresses in Ohio	1,972	May 11, 1896
		Hon. L. J. Fenton	910 I street northwest, Washington, D. C	1,028	Do.
		do	do	1,000	May 21, 1896
Fisher, I. F	New York	Hon. I. F. Fisher	Care of Wm. Herrman, 1952 Second street northwest, Washington, D. C.	1,800	May 19, 1896
		Miscellaneous individuals	Miscellaneous addresses in New York	1,200	Do.
		do	do	300	May 27, 1896
		Hon. I. F. Fisher	Care of Wm. Herrman, 1952 Second street northwest, Washington, D. C.	700	Do.
Fitzgerald, J. F	Massachusetts	Hon. J. F. Fitzgerald	Care of Hon. Jas. G. Maguire, 809 Twelfth street northwest, Washington, D. C.	1,000	May 18, 1896
		do	Care of Hon. Jos. Wheeler, New Jersey avenue, Washington, D. C.	2,000	Do.
		Hon. David Floyd	Winthrop, Mass	1,000	May 27, 1896
Fletcher, L	Minnesota	Hon. L. Fletcher	Care of F. A. Johnson, 201 A street southeast, Washington, D. C.	261	May 16, 1896
		Miscellaneous individuals	Miscellaneous addresses in Minnesota	2,739	Do.
Foote, W. T., jr	New York	Hon. W. T. Foote, jr	Fort Henry, N. Y	3,000	Do.
Foss, G. Edmund	Illinois	Hon. G. Edmund Foss	51 D street southeast, Washington, D. C	3,000	May 4, 1896
		do	do	1,000	May 25, 1896

Fowler, Chas. N	New Jersey	Hon. Chas. N. Fowler	The Cairo, Washington, D. C	3,000	Apr. 29, 1896
		do	Care of W. A. Calderhead, 213 North Capitol street, Washington, D. C.	1,000	May 28, 1896
Flynn, D. T	Oklahoma	Hon. D. T. Flynn	2820 Fourteenth street northwest, Washington, D. C.	3,000	Apr. 23, 1896
		do	do	1,000	May 21, 1896
Gallinger, J. H	New Hampshire	Hon. J. H. Gallinger	Committee on Pensions, United States Senate, Washington, D. C.	3,000	May 15, 1896
		Miscellaneous individuals	Miscellaneous addresses in New Hampshire	1,000	May 25, 1896
Gear, J. H	Iowa	do	Miscellaneous addresses in Iowa	3,000	May 11, 1896
		Hon. John H. Gear	Committee on Pacific Railroads, United States Senate, Washington, D. C.	1,000	May 22, 1896
George, J. Z	Mississippi	Chairman Democratic Executive Committee	Brandon, Miss	30	May 1, 1896
		do	Grenada, Miss	30	Do.
		do	Rosedale, Miss	30	Do.
		do	Hernando, Miss	30	Do.
		do	Forest, Miss	30	Do.
		do	Westonville, Miss	30	Do.
		do	Raleigh, Miss	30	Do.
		do	Booneville, Miss	30	Do.
		do	Columbia, Miss	30	Do.
		do	Dekalb, Miss	30	Do.
		do	Vicksburg, Miss	30	Do.
		do	Carthage, Miss	30	Do.
		do	Yazoo City, Miss	30	Do.
		do	Mayersville, Miss	30	Do.
		do	Tupelo, Miss	30	Do.
		do	Aberdeen, Miss	30	Do.
		do	Indianola, Miss	30	Do.
		do	Clarkesdale, Miss	30	Do.
		do	Meadville, Miss	30	Do.
		do	Scranton, Miss	30	Do.
		do	Kosciusko, Miss	30	Do.
		do	Meridian, Miss	30	Do.
		do	Paulding, Miss	30	Do.
		do	Williamsburg, Miss	30	Do.
		do	Fayette, Miss	30	Do.
		do	Jackson, Miss	30	Do.
		do	Iuka, Miss	30	Do.
		do	Augusta, Miss	30	Do.
		do	Holly Springs, Miss	30	Do.
		do	Philadelphia, Miss	30	Do.
		do	Bay St. Louis, Miss	30	Do.
		do	Canton, Miss	30	Do.
		do	Liberty, Miss	30	Do.
		do	Natchez, Miss	30	Do.
		do	Greenwood, Miss	30	Do.
		do	Tunica, Miss	30	Do.
		do	Decatur, Miss	30	Do.
		do	Batesville, Miss	30	Do.
		do	Waynesboro, Miss	30	Do.
		do	Brookhaven, Miss	30	Do.
		do	Poplarsville, Miss	30	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
George, J. Z	Mississippi	Chairman Democratic Executive Committee	Pontotoc, Miss	30	May 1, 1896
		do	Quitman, Miss	30	Do.
		do	Ashland, Miss	30	Do.
		do	Pittsboro, Miss	30	Do.
		do	Hazlehurst, Miss	30	Do.
		do	Ellisville, Miss	30	Do.
		do	Walthall, Miss	30	Do.
		do	Woodville, Miss	30	Do.
		do	Houston, Miss	30	Do.
		do	Starkville, Miss	30	Do.
		do	West Point, Miss	30	Do.
		do	Leakesville, Miss	30	Do.
		do	Greenville, Miss	30	Do.
		do	Mississippi City, Miss	30	Do.
		Miscellaneous individuals	Miscellaneous addresses in Mississippi	191	Do.
		Chairman Democratic Executive Committee	Winona, Miss	30	Do.
		A. H. George	Carrollton, Miss	25	Do.
		F. Attneave	Blackhawk, Miss	30	Do.
		T. J. George	Hattiesburg, Miss	100	Do.
		Chairman Democratic Executive Committee	Monticello, Miss	30	Do.
		do	Chester, Miss	30	Do.
		N Ray & Son	Carrollton, Miss	100	Do.
		Chairman Democratic Executive Committee	New Albany, Miss	30	Do.
		do	Ripley, Miss	30	Do.
		do	Fulton, Miss	30	Do.
		do	Charleston, Miss	30	Do.
		do	Senatobia, Miss	30	Do.
		do	Corinth, Miss	30	Do.
		do	Port Gibson, Miss	30	Do.
		do	Oxford, Miss	30	Do.
		do	Coffeeville, Miss	30	Do.
		do	Rolling Fork, Miss	30	Do.
		do	Columbus, Miss	30	Do.
		do	Louisville, Miss	30	Do.
		do	Belen, Miss	30	Do.
		do	Macon, Miss	30	Do.
		do	Lexington, Miss	30	Do.
		Bingham & Co	Carrollton, Miss	100	Do.
		R. C. Wilson	Vaiden, Miss	100	Do.
		Hon. J. Z. George	United States Senate, Washington, D. C	164	Do.
		Chairman Democratic Executive Committee	Brookhaven, Miss	31	May 27,
		Miscellaneous individuals	Miscellaneous addresses in Mississippi	669	Do.
		Chairman Democratic Executive Committee	Columbia, Miss	30	Do.
		do	Rolling Fork, Miss	30	Do.

		do	Fayette, Miss	30	Do.
		do	Leakesville, Miss	30	Do.
		do	Poplarville, Miss	30	Do.
Gibson, C. H	Maryland	Miscellaneous individuals	Miscellaneous addresses in Maryland	625	May 13, 1896
		Wm. S. Merrick	Trappe, Talbot County, Md	250	Do.
		W. Hopper Gibson	Centerville, Queen Anne County, Md	375	Do.
		Wm. D. Smith	Ingleside, Queen Anne County, Md	125	Do.
		Albert Willis	St. Michael, Talbot County, Md	125	Do.
		Edwin S. Valliant	Church Hill, Queen Anne County, Md	125	Do.
		Geo. W. Fennimore	Crumpton, Queen Anne County, Md	125	Do.
		Jas. H. Wells	Oxford, Talbot County, Md	125	Do.
		Ethan A. Carey	Ocean City, Md	125	Do.
		Osmond Hammond	Royal Oak, Talbot County, Md	125	Do.
		Jno. T. Hammond	Berlin, Md	125	Do.
		Frank Beall	Woodmore, Prince George County, Md	125	Do.
		S. S. Goodhand	Sudlersville, Queen Anne County, Md	125	Do.
		Wm. H. Anthony	McGinnes, Queen Anne County, Md	125	Do.
		C. J. B. Mitchell	Queenstown, Queen Anne County, Md	125	Do.
		Chas. W. Kibler	Catlin, Queen Anne County, Md	125	Do.
		John O. Phillips	Kent Island, Queen Anne County, Md	125	Do.
Gordon, J. B	Georgia	Hon. Chas. H. Gibson	Easton, Md	1,000	May 21, 1896
		Miscellaneous individuals	Miscellaneous addresses in Georgia	2,815	Apr. 30, 1896
		Hon. J. B. Gordon	Maltby Building, United States Senate, Washington, D. C.	185	Do.
		do	do	1,000	May 22, 1896
Gorman, A. P	Maryland	Hon. A. P. Gorman	Conference Room, United States Senate, Washington, D. C.	3,000	May 2, 1896
		do	do	1,000	May 22, 1896
Gray, Geo	Delaware	Hon. Geo. Gray	Maltby Building, United States Senate, Washington, D. C.	951	May 12, 1896
		Miscellaneous individuals	Miscellaneous addresses in Delaware	2,049	Do.
		Hon. Geo. Gray	Room 53, Maltby Building, Washington, D. C	1,000	May 23, 1896
Gamble, Robt. J	South Dakota	Hon. Robt. J. Gamble	The Normandie, Washington, D. C	292	May 16, 1896
		Miscellaneous individuals	Miscellaneous addresses in South Dakota	2,708	Do.
		do	do	900	May 25, 1896
		Hon. Robt. J. Gamble	Yankton, S. Dak	100	Do.
		Miscellaneous individuals	Miscellaneous addresses in South Dakota	700	May 28, 1896
Gardner, J. J	New Jersey	do	Miscellaneous addresses in New Jersey	2,979	May 14, 1896
		Hon. J. J. Gardner	House of Representatives, Washington, D. C	21	Do.
		do	Willard's Hotel, Washington, D. C	1,000	May 27, 1896
Gibson, H. R	Tennessee	Miscellaneous individuals	Miscellaneous addresses in Tennessee	3,000	Do.
		Hon. H. R. Gibson	412 Sixth street northwest, Washington, D. C	1,000	May 22, 1896
		Miscellaneous individuals	Miscellaneous addresses in Tennessee	2,761	May 28, 1896
Gillette, C. W	New York	Hon. C. W. Gillette, Committee on Expenditures in the Department of Agriculture.	Room 3, Terrace, House of Representatives, Washington, D. C.	3,000	May 13, 1896
		do	do	451	May 27, 1896
		Miscellaneous individuals	Miscellaneous addresses in New York	549	Do.
Gillette, F. H	Massachusetts	do	Miscellaneous addresses in Massachusetts	3,000	May 18, 1896

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Gillette, F. H	Massachusetts	Miscellaneous individuals	Miscellaneous addresses in Massachusetts	712	May 27, 1896
		Hon. F. H. Gillette	922 Fifteenth street, Washington, D. C	238	Do.
Goodwyn, A. S	Alabama	Miscellaneous individuals	Miscellaneous addresses in Alabama	650	May 12, 1896
		John Nickels, esq	Electric, Ala	25	Do.
		John Sanford	Crosskeys, Ala	25	Do.
		W. T. B. Lynch	do	25	Do.
		Judge Phillips	Ashland, Clay County, Ala	25	Do.
		People's Advocate	do	25	Do.
		Wm. H. Beegler	Elmore, Elmore County, Ala	25	Do.
		Judge Weathers	Wedowee, Ala	25	Do.
		Col. R. E. Merrill	Heflin, Ala	25	Do.
		Reed Smith, esq	Crosskeys, Ala	25	Do.
		John Wilson	Elmore, Ala	25	Do.
		J. A. Grimmut	Tuskegee, Ala	25	Do.
		J. W. Davison	2305 Pennsylvania avenue, Washington, D. C	25	Do.
		J. R. Simmons	Crosskeys, Macon County, Ala	25	Do.
		Col. John Franklin	Idaho, Clay County, Ala	25	Do.
		Miscellaneous individuals	Miscellaneous addresses in Alabama	1,000	May 22, 1896
Graff, J. V	Illinois	do	Miscellaneous addresses in Illinois	2,895	May 9, 1896
		Hon. J. V. Graff	House of Representatives, Washington, D. C	105	Do.
		Miscellaneous individuals	Miscellaneous addresses in Illinois	372	May 20, 1896
		do	do	1,000	May 23, 1896
Griffin, M	Wisconsin	do	Miscellaneous addresses in Wisconsin	3,000	May 14, 1896
		do	do	324	May 27, 1896
		Hon. E. F. Clark	Galesville, Wis	50	Do.
		J. L. Pettingill	La Crosse, Wis	255	Do.
		Hon. J. R. Lyon	Glendale, Wis	40	Do.
		H. J. Ormsley	Black River Falls, Wis	104	Do.
		Hon. L. S. Fisher	Sparta, Wis	75	Do.
		Thos. McCaul	Tomah, Wis	50	Do.
		Hon. S. D. Hubbard	Mordovi, Wis	51	Do.
		Hon. R. R. Kempter	Alma, Wis	51	Do.
Griswold, M	Pennsylvania	C. M. Hayes	Titusville, Pa	100	May 14, 1896
		Hon. M. Griswold	Erie, Pa	75	Do.
		Miscellaneous individuals	Miscellaneous addresses in Pennsylvania	2,825	Do.
		Hon. M. Griswold	The Portland, Washington, D. C	1,000	May 22, 1896
Grosvenor, C. H	Ohio	Hon. C. H. Grosvenor	Room 178, Cochran Hotel, Washington, D. C	175	May 11, 1896
		Hon. F. A. Kelley	New Lexington, Ohio	662	May 20, 1896
		V. R. Sprague	McArthur, Ohio	500	Do.
		Miscellaneous individuals	Miscellaneous addresses in Ohio	1,663	Do.
		Hon. C. H. Grosvenor	Cochran Hotel, Washington, D. C	1,000	May 22, 1896
Grout, W. W	Vermont	Miscellaneous individuals	Miscellaneous addresses in Vermont	3,000	May 19, 1896
		do	do	1,000	May 23, 1896
Grow, G. A	Pennsylvania	do	Miscellaneous addresses in Pennsylvania	17	May 28, 1896

		Geo. S. Mackey	Lathrop, Pa	50	Do.
Hale, Eugene	Maine	Hon. Eugene Hale	Committee on Printing, United States Senate, Washington, D. C.	1,000	May 20, 1896
		do	do	1,000	May 25, 1896
Hansbrough, H. C.	North Dakota	Hon. H. H. Strom	Hillsboro, N. Dak	80	May 15, 1896
		W. A. Hamilton	Devils Lake, N. Dak	171	Do.
		Hon. W. T. Perkins	Bismarck, N. Dak	100	Do.
		W. W. Kingsbury	Asnabrock, N. Dak	100	Do.
		Hon. Homer E. Kinney	St. Thomas, N. Dak	50	Do.
		Hon. A. J. Gronna	Lakota, N. Dak	50	Do.
		Hon. J. P. Lamb	Michigan City, N. Dak	50	Do.
		W. Winters	Langdon, N. Dak	150	Do.
		Chas. McCarthy	Milton, N. Dak	150	Do.
		Hon. G. G. Beardsley	McCanna, N. Dak	150	Do.
		Miscellaneous individuals	Miscellaneous addresses in North Dakota	1,949	Do.
		Hon. H. C. Hansbrough	Maltby Building, Washington, D. C.	1,000	May 27, 1896
Harris, I. G	Tennessee	Hon. I. G. Harris	Committee on District of Columbia, United States Senate, Washington, D. C.	3,000	Apr. 23, 1896
		do	Committee on Private Land Claims, United States Senate, Washington, D. C.	1,000	May 21, 1896
Hawley, J. R	Connecticut	Miscellaneous individuals	Miscellaneous addresses in Connecticut	1,757	May 18, 1896
		Hon. J. R. Hawley	Committee on Military Affairs, United States Senate, Washington, D. C.	1,243	Do.
		do	do	1,000	May 25, 1896
Hill, D. B	New York	Hon. David B. Hill	8 Lafayette Square, Washington, D. C.	3,000	May 13, 1896
		do	do	1,000	May 23, 1896
Hoar, Geo. F	Massachusetts	E. T. Rowell	Lowell, Mass	75	May 19, 1896
		Frank H. Cando	Pittsfield, Mass	75	Do.
		W. H. H. Thurston	Oxford, Mass	75	Do.
		Henry L. Crane	Bridgewater, Mass	75	Do.
		Francis Collamore	North Pembroke, Mass	75	Do.
		Wm. H. Thomas	Hingham, Mass	75	Do.
		A. B. Hoges	Taunton, Mass	75	Do.
		J. M. Danford	Lynnfield, Mass	100	Do.
		John W. Ogden	Fitchburg, Mass	100	Do.
		Mathew Walker	Barre, Mass	100	Do.
		J. H. Humphrey	Athol Center, Mass	100	Do.
		John B. Bowker	Worcester, Mass	100	Do.
		Herbert Salvin	Amherst, Mass	100	Do.
		Wm. S. Foote	Westfield, Mass	100	Do.
		W. A. Kilburn	South Lancaster, Mass	100	Do.
		S. S. Warner	Northampton, Mass	100	Do.
		Wm. S. Allen	Greenfield, Mass	100	Do.
		John M. Merriam	South Framingham, Mass	100	Do.
		Hon. Ed. R. Tinker	North Adams, Mass	100	Do.
		F. B. Watson	Spencer, Mass	100	Do.
		C. V. Corey	Sturbridge, Mass	100	Do.
		A. H. Fielding	Amesburg, Mass	75	Do.
		W. P. Mayo	South Framingham, Mass	75	Do.
		S. W. Hawkes	Charlemont, Mass	75	Do.
		H. H. Hutchins	Barnstable, Mass	75	Do.
		Geo. F. Miller	North Adams, Mass	75	Do.
		Frank H. Briggs	Great Barrington, Mass	75	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Hoar, Geo. F	Massachusetts	F. D. Barton	Palmer, Mass	75	May 19, 1896
		J. F. Murphey	Nantucket, Mass	75	Do.
		Augustus Story	Uxbridge, Mass	75	Do.
		Edward W. Doherty	Marblehead, Mass	200	Do.
		Hon. Geo. F. Hoar	U S. Senate, Washington, D. C	200	Do.
		do	Care Edward W Doherty, Marblehead, Mass	1,000	May 22, 1896
Hadley, W. F. L	Illinois	Miscellaneous individuals	Miscellaneous addresses in Illinois	3,000	May 5, 1896
		do	do	1,000	May 25, 1896
Hager, A. L	Iowa	Hon. A. L. Hager	Committee on Enrolled Bills, House of Representatives, Washington, D. C.	3,000	May 2, 1896
		do	Portland Flats, Washington, D. C	1,000	May 21, 1896
Hainer, E. J	Nebraska	Hon. E. J. Hainer	3000 Fifteenth street northwest, Washington, D. C.	76	May 2, 1896
		F. G. Simmons	Seward, Nebr	120	Do.
		J. H. Betzer	do	120	Do.
		C. M. Rigg	Beatrice, Nebr	250	Do.
		N. E. Dayton	York, Nebr	120	Do.
		T. J. Prikett	Waboo, Nebr	160	Do.
		T. E. Sedgwick	York, Nebr	120	Do.
		W. F. Primley, jr	Editor Mead Advocate, Mead, Nebr	80	Do.
		C. S. Milla	Fairmont, Nebr	240	Do.
		E. L. King	Osceola, Nebr	240	Do.
		S. H. Steele	David City, Nebr	240	Do.
		Samuel Sponogle	Aurora, Nebr	240	Do.
		F. M. Wetherald	Hebron, Nebr	240	Do.
		E. H. Hinshaw	Fairburg, Nebr	240	Do.
		C. B. Anderson	Dewitt, Nebr	240	Do.
		Miscellaneous individuals	Miscellaneous addresses in Nebraska	274	Do.
		Hon. E. S. King	Osceola, Nebr	200	May 27, 1896
		Hon. J. E. Cobbey, jr	Beatrice, Nebr	200	Do.
		Saml. Sponogle	Aurora, Nebr	200	Do.
		Hon. F. I. Foss	Crete, Nebr	100	Do.
		Hon. Chas. H. Sloan	Geneva, Nebr	100	Do.
		Hon. H. S. Steele	David City, Nebr	193	Do.
		Miscellaneous individuals	Miscellaneous addresses in Nebraska	7	Do.
Hall, U. S	Missouri	do	Miscellaneous addresses in Missouri	1,367	May 11, 1896
		do	do	78	May 25, 1896
		Hon. U. S. Hall	Care J. A Cartright, 417 Sixth street northwest, Washington, D. C.	922	Do.
Halterman, F	Pennsylvania	Hon. F. Halterman	404 First street, northwest, Washington, D. C	2,920	May 9, 1896
		Miscellaneous individuals	Miscellaneous addresses in Pennsylvania	80	Do.
		Hon. F. Halterman	404 First street northwest, Washington, D. C	1,000	May 22, 1896
Hanley, J. F	Indiana	Miscellaneous individuals	Miscellaneous addresses in Indiana	1,421	May 6, 1896
		Hon. J. F. Hanley	Care of Robt. Braden, 236 North Capitol street, Washington, D. C.	579	Do.

		Hanley & Billings	Williamsport, Ind	1,000	Do.
Hardy, A. M	Indiana	Wm. W. Giger	Heltonville, Ind	50	May 7, 1896
		Robt. Gerking	Huron, Ind	50	Do.
		C. P. Hollingsmith	Bruceville, Knox County, Ind	50	Do.
		Theodore McCord	South Martin, Martin County, Ind	50	Do.
		J. H. Fitzpatrick	Switz City, Ind	50	Do.
		G. N. Terrell	Qwensburg, Greene County, Ind	50	Do.
		Geo. Wllliams, esq	Oaktown, Knox County, Ind	50	Do.
		D. S. Weinaer	Montgomery, Daviess County, Ind	50	Do.
		Joseph E. Walton	Koleen, Green County, Ind	50	Do.
		A. M. Clark	Raglesville, Daviess County, Ind	50	Do.
		Isaiah Fry	Loogootee, Martin County, Ind	50	Do.
		E. S. Earle	Elnora, Daviess County, Ind	50	Do.
		John Trueblood	Smiley, Daviess County, Ind	50	Do.
		N. H. Rodenblok	Linton, Ind	50	Do.
		Chas. T. Haven	Lyons, Ind	50	Do.
		Lewis Field	Manor City, Knox County, Ind	50	Do.
		Ellis House, esq	Bicknell, Knox County, Ind	50	Do.
		Nelson Purcell	Cumback, Daviess County, Ind	50	Do.
		John Roartz	Corning, Daviess County, Ind	50	Do.
		R. D. Stotts	Farlen, Daviess County, Ind	50	Do.
		Geo. N. Wilson	Epsom, Daviess County, Ind	50	Do.
		Charles Shuk	Newberry, Greene County, Ind	50	Do.
		M. C. Stephenson, esq	Worthington, Greene County, Ind	100	Do.
		Col. W. M. Munson	Mitchell, Lawrence County, Ind	100	Do.
		D. G. N. Willeford	Washington, Ind	100	Do.
		Fabian A. Summers	do	100	Do.
		Michael Shirey, esq	Shoals, Ind	100	Do.
		Col. V. V. Williams	Bedford, Lawrence County, Ind	100	Do.
		John T. Lamb	Bloomfield, Greene County, Ind	100	Do.
		John R. Callender	Vincennes, Ind	100	Do.
		Miscellaneous individuals	Miscellaneous addresses in Indiana	450	Do.
		L. E. Letsinger	Jasonville, Greene County, Ind	50	Do.
		Robt. Curry	Edwardsport, Knox County, Ind	50	Do.
		Jos. B. Morford	Frelandville, Knox County, Ind	50	Do.
		Jeff. Jerrall	Sanborn, Knox County, Ind	50	Do.
		Joseph D. Laughlin	Odin, Daviess County, Ind	50	Do.
		Wm. F. Neil	Newark, Greene County, Ind	50	Do.
		E. H. Tamey	Cornettsville, Daviess County, Ind	50	Do.
		J. A. McCord	Alfordsville, Daviess County, Ind	50	Do.
		S. C. Harris	Cannelburg, Daviess County, Ind	50	Do.
		John H. Robinson	Trainor, Daviess County, Ind	50	Do.
		Austin F. Hixon	Glendale, Daviess County, Ind	50	Do.
		Col. N. R. Quillian	Wheatland, Knox County, Ind	50	Do.
		Dr. E. D. Millis	Plainville, Daviess County, Ind	50	Do.
		Wm. R. Nesbit	Sullivan, Ind	250	May 27, 1896
		N. C. Gray	Gosport, Ind	250	Do.
		Jno. W. Anderson	Spencer, Ind	250	Do.
		Wm. F. Browning	Bloomington, Ind	250	Do.
Harmer, A. C	Pennsylvania	Miscellaneous individuals	Miscellaneous addresses in Pennsylvania	203	May 12, 1896
		Hon. A. C. Harmer	1602 K street northwest, Washington, D. C	2,797	Do.
		do	do	500	May 27, 1896
		do	Station G, Philadelphia, Pa	500	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Harris, S. R	Ohio	Hon. S. R. Harris	220 North Capitol street, Washington, D. C	2,163	May 11, 1896
		Miscellaneous individuals	Miscellaneous addresses in Ohio	837	Do.
		do	do	1,000	May 22, 1896
Harrison, G. P	Alabama	do	Miscellaneous addresses in Alabama	2,885	Apr. 27, 1896
		Hon. G. P. Harrison	931 G street northwest, Washington, D. C	115	Do.
		Miscellaneous individuals	Miscellaneous addresses in Alabama	974	May 28, 1896
Hart, J. J	Pennsylvania	Hon. Joseph J. Hart	Care J. P. Berg, room 160, Loan and Trust Building, Washington, D. C.	3,000	May 2, 1896
		do	do	1,000	May 21, 1896
		do	do	2,000	May 28, 1896
Hartman, C. S	Montana	Hon. C. S. Hartman	1734 R street northwest, Washington, D. C	2,002	May 19, 1896
		do	1719 Oregon avenue, Washington, D. C	250	Do.
		D. J. Talbert	Great Falls, Mont	200	Do.
		L. L. Calloway	Virginia City, Mont	150	Do.
		R. W. Lamb	Monarch, Mont	50	Do.
		I. A. Marston	Missoula, Mont	50	Do.
		Miscellaneous individuals	Miscellaneous addresses in Montana	298	Do.
		do	do	506	May 21, 1896
		Sam Jackson	Big Timber, Mont	100	Do.
		N. J. Bulenburg	Deer Lodge, Mont	100	Do.
		C. B. Burkett	Pipestone Springs, Mont	100	Do.
		Geo. B. McLaughlin	Fort Benton, Mont	100	Do.
		Fred. Wright	Great Falls, Mont	94	Do.
Hatch, J. A	Indiana	Hon. J. A. Hatch	131 A street northeast, Washington, D. C	103	May 6, 1896
		Miscellaneous individuals	Miscellaneous addresses in Indiana	2,897	Do.
		Hon. J. A. Hatch	131 A street northeast, Washington, D. C	1,000	May 21, 1896
Henry, C. L	do	C. T. Henry	1817 Sixteenth street northwest, Washington, D. C.	348	May 6, 1896
		Miscellaneous individuals	Miscellaneous addresses in Indiana	2,652	Do.
Heatwole, J. P	Minnesota	do	Miscellaneous addresses in Minnesota	2,198	May 19, 1896
		John B. Kelly	Farmington, Minn	50	Do.
		W. D. Joubert	Litchfield, Minn	50	Do.
		E. H. Leyhed	Faribault, Minn	50	Do.
		G. Barngard	Chaska, Minn	25	Do.
		C. F. Johnson	Winthrop, Minn	25	Do.
		C. G. Holgren	Watertown, Minn	25	Do.
		Henry Forms	Pine Island, Minn	25	Do.
		Dr. H. O. Smith	Shakopee, Minn	25	Do.
		J. A. Lawrence	Northfield, Minn	25	Do.
		M. W. Grimes	Lesueur, Minn	25	Do.
		N. K. Suimavres	Red Wing, Minn	40	Do.
		P. B. Olson	Renville, Minn	40	Do.
		T. M. Paine	Glencoe, Minn	35	Do.
		Hon. J. P. Heatwole	The Cairo, Washington, D. C	92	Do.
		E. Reheehe	Kenyon, Minn	30	Do.

S. S. Lewis	Cannon Falls, Minn	30	Do.
Bart Grover	Zumbrota, Minn	30	Do.
W. B. Stron	Hector, Minn	30	Do.
Louis Mongan	Dassel, Minn	30	Do.
Hiram Howe	Red Wing, Minn	30	Do.
J. A. Jilley	Hastings, Minn	30	Do.
G. R. Zickrick	Hutchinson, Minn	30	Do.
G. A. Blair	Waterville, Minn	30	Do.
Geo. Welsh	Morton, Minn	40	May 27, 1896
L. Nichols	Fairfax, Minn	40	Do.
D. G. Thompson	Merriam, Minn	40	Do.
C. S. Johnson	Winthrop, Minn	40	Do.
Jno. Geib	Henderson, Minn	40	Do.
H. Gugisbary	Gibbon, Minn	40	Do.
W. B. Strono	Hector, Minn	40	Do.
A. M. Slocum	Norwood, Minn	40	Do.
P. B. Olson	Renville, Minn	40	Do.
E. Rehuke	Kenyon, Minn	40	Do.
Dr. Puffer	Bird Island, Minn	40	Do.
N. A. Ferguson	Shakopee, Minn	40	Do.
B. F. Byers	Olivia, Minn	40	Do.
Will O'Brien	Eden Valley, Minn	40	Do.
G. A. Blair	Waterville, Minn	40	Do.
L. M. Norgrew	Dassel, Minn	40	Do.
Hon. C. G. Halgren	Watertown, Minn	40	Do.
M. W. G. Grimes	Lesueur, Minn	40	Do.
W. H. Gold	Renville, Minn	40	Do.
J. A. Bergeley	Franklin, Minn	40	Do.
J. B. Kelley	Farmington, Minn	120	Do.
W. D. Joubert	Litchfield, Minn	80	Do.
Bart Grover	Zumbroto, Minn	40	May 28, 1896
D. Feldman	Arlington, Minn	40	Do.
Rev. John J. Hand	Green Isle, Minn	40	Do.
Job Lloyd	Lloyd, Minn	40	Do.
I. M. Paine	Glencoe, Minn	80	Do.
G. R. Zickrick	Hutchinson, Minn	80	Do.
John E. Kern	Stewart, Minn	40	Do.
A. S. Weymouth	South St. Paul, Minn	40	Do.
R. R. Mintin	Kasota, Minn	40	Do.
J. A. Jeeley	Hastings, Minn	40	Do.
F. W. Ridgeway	Morristown, Minn	40	Do.
Jos. Herkenmatt	Dundas, Minn	40	Do.
S. S. Lenoirs	Cannon Falls, Minn	40	Do.
A. W. McKinstry	Faribault, Minn	40	Do.
G. Bougard	Chaska, Minn	40	Do.
Hon. J. H. Boxned	Goodline, Minn	40	Do.
Robt. Carmicheal	East Castle Rock, Minn	40	Do.
A. F. Arndt	Prior Lake, Minn	40	Do.
F. H. Juergens	Jordan, Minn	40	Do.
C. O. Feas	Mayer, Minn	40	Do.
Dr. H. R. Deissner	Waconia, Minn	40	Do.
Hiram Howe	Red Wing, Minn	40	Do.
A. W. Sternke	Gaylord, Minn	40	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Heiner, D. B	Pennsylvania	Postmaster	Long Run, Pa	25	May 14, 1896
		do	McWilliams, Pa	25	Do.
		do	Bryan, Pa	25	Do.
		do	Whitesburg, Pa	25	Do.
		do	Atwood, Pa	25	Do.
		do	Blanco, Pa	25	Do.
		do	Echo, Pa	25	Do.
		do	Greendale, Pa	25	Do.
		do	West Valley, Pa	25	Do.
		do	Mahoning, Pa	25	Do.
		do	Dee, Pa	25	Do.
		do	Templeton, Pa	25	Do.
		do	Deanville, Pa	25	Do.
		do	Rimer, Pa	75	Do.
		do	Cowansville, Pa	75	Do.
		do	Putneyville, Pa	75	Do.
		do	Oakridge, Pa	75	Do.
		do	Dayton, Pa	75	Do.
		do	Widnoon, Pa	75	Do.
		do	Shady Plain, Pa	50	Do.
		do	Spring Church, Pa	50	Do.
		S. A. Smith	Indiana, Pa	50	Do.
		Postmaster	North Buffalo, Pa	50	Do.
		do	Slatelick, Pa	50	Do.
		do	Adrian, Pa	50	Do.
		do	Manorville, Pa	50	Do.
		do	Barnards, Pa	50	Do.
		do	Ewing, Armstrong County, Pa	50	Do.
		do	Goheenville, Armstrong County, Pa	50	Do.
		do	Mosgrove, Armstrong County, Pa	50	Do.
		do	Tidal, Armstrong County, Pa	50	Do.
		do	Craigsville, Pa	50	Do.
		do	Walkchalk, Pa	50	Do.
		do	Kellersburg, Armstrong County, Pa	50	Do.
		do	Neale, Armstrong County, Pa	50	Do.
		do	Adams, Armstrong County, Pa	100	Do.
		do	Bradys Bend, Armstrong County, Pa	100	Do.
		do	Sherrett, Pa	100	Do.
		do	Worthington, Pa	100	Do.
		do	Oakland, Pa	100	Do.
		do	Pierce, Pa	100	Do.
		do	Elderton, Armstrong County, Pa	100	Do.
		do	Rural Valley, Armstrong County, Pa	100	Do.
		Dan H. Core	921 Sixth street northwest, Washington, D. C	100	Do.

		Miscellaneous individuals	Miscellaneous addresses in Pennsylvania	252	Do.
		Hon. D. B. Heiner	Kittanning, Pa	273	Do.
Hemenway, J. A	Indiana	Hon. J. A. Hemenway	212 North Capitol street, Washington, D. C	3,000	May 7, 1896
		do	do	1,000	May 21, 1896
Henderson, D. B	Iowa	Miscellaneous individuals	Miscellaneous addresses in Iowa	3,000	May 9, 1896
		do	do	1,000	May 25, 1896
Hendrick, J. K	Kentucky	do	Miscellaneous addresses in Kentucky	2,387	May 7, 1896
		Hon. J. K. Hendrick	Washington, D. C	613	Do.
		Miscellaneous individuals	*Miscellaneous addresses in Kentucky*	1,000	May 20, 1896
Henry, E. S	Connecticut	do	Miscellaneous addresses in Connecticut	2,307	May 18, 1896
		Hon. E. S. Henry	1421 K street, northwest, Washington, D. C	693	Do.
		M. E. Thompson	Broad Brook, Conn	50	May 27, 1896
		Edward W. Dewey	North Granby, Conn	50	Do.
		W. C. Sikes	Thomsonville, Conn	50	Do.
		W. L. Chamberlin	Storrs, Conn	50	Do.
		Henry S. Brooks	Cheshire, Conn	500	Do.
		Arthur H. Eldridge	Willington, Conn	50	Do.
		Luther S. Eddy	Unionville, Conn	50	Do.
		Wallace D. Camp	Plainville, Conn	50	Do.
		Fred A. West	Rockville, Conn	50	Do.
		Boudette A. Peck	Bristol, Conn	50	Do.
		E. T. Wells	East Windsor, Conn	50	Do.
Hepburn, W. P	Iowa	Hon. W. P. Hepburn	Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D. C.	420	May 12, 1896
		Miscellaneous individuals	Miscellaneous addresses in Iowa	2,580	Do.
Hermann, B	Oregon	do	Miscellaneous addresses in Oregon	700	May 20, 1896
		Hon. Binger Hermann	House of Representatives, Washington, D. C	2,300	Do.
		do	do	902	May 25, 1896
		Miscellaneous individuals	*Miscellaneous addresses in Oregon*	98	Do.
Hicks, J. D	Pennsylvania	do	Miscellaneous addresses in Pennsylvania	2,802	May 12, 1896
		Hon. J. D. Hicks	Altoona, Pa	198	Do.
		do	Willards Hotel, Washington, D. C	1,000	May 27, 1896
Hilborn, S. G	California	Editor Ledger	Antioch, Cal	50	May 19, 1896
		Editor News	Arbuckle, Cal	50	Do.
		Editor New Era	Benicia, Cal	50	Do.
		Editor Gazette	Colusa, Cal	50	Do.
		Editor Bee	Lakeport, Cal	50	Do.
		Prof. J. T. Hemsaker	Willow, Cal	50	Do.
		Editor Herald	Berkeley, Cal	50	Do.
		Editor Sun	Colusa, Cal	50	Do.
		Editor Herald	do	50	Do.
		Editor Avalanche	Lakeport, Cal	50	Do.
		Editor Tribune	Dixon, Cal	50	Do.
		Editor Journal	Haywoods, Cal	50	Do.
		Editor Press	Lakeport, Cal	50	Do.
		Editor Herald	Livermore, Cal	50	Do.
		Editor Bulletin	Lower Lake, Cal	50	Do.
		Editor Independent	Middletown, Cal	50	Do.
		Editor Reporter	San Leandro, Cal	50	Do.
		Editor Chronicle	Vallejo, Cal	50	Do.
		Editor Journal	Willow, Cal	50	Do.
		Editor Reporter	Vacaville, Cal	50	Do.
		Editor Farmer	Williams, Cal	50	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Hilborn, S. G	California	Editor Review	Willow, Cal	50	May 19, 1896
		Editor Express	Winters, Cal	50	Do.
		Editor Democrat	Woodland, Cal	50	Do.
		Editor Mail	do	50	Do.
		Editor Alliance	do	50	Do.
		Editor Advocate	Berkeley, Cal	50	Do.
		Editor Republican	Suisun City, Cal	50	Do.
		Editor News	Rio Vista, Cal	50	Do.
		Editor Press	Irvington, Cal	50	Do.
		Claude V. Burke	Yolo, Yolo County, Cal	30	Do.
		Mrs. G. M. Roberts	970 East Twenty-second street, Oakland, Cal	25	Do.
		James Brownlie	Vallejo, Cal	25	Do.
		Editor Times	Oakland, Cal	100	Do.
		Editor Tribune	do	100	Do.
		Editor Enquirer	do	100	Do.
		Miscellaneous individuals	Miscellaneous addresses in California	546	Do.
		Hon. S. G. Hilborn	Committee on Public Buildings, House of Representatives, Washington, D. C.	579	Do.
		Miscellaneous individuals	Micellaneous addresses in California	107	May 20, 1896
		Editor Tribune	Dixon, Cal	100	May 25, 1896
		Editor Herald	Livermore, Cal	100	Do.
		Editor Encinal	Alameda, Cal	100	Do.
		Editor Woodland Mail	Woodland, Cal	100	Do.
		Will A. Nash, Editor Gazette	Berkeley, Cal	100	Do.
		Editor Democrat	Woodland, Cal	100	Do.
		Miscellaneous individuals	Miscellaneous addresses in California	32	Do.
		Editor Independent	Middletown, Cal	50	Do.
		Editor Press	Lakeport, Cal	50	Do.
		Editor Bulletin	Lower Lake, Cal	50	Do.
		Editor Bee	Lakeport, Cal	50	Do.
		Editor Reporter	San Leandro, Cal	50	Do.
		Editor Avalanche	Lakeport, Cal	50	Do.
		Editor Ledger	Antioch, Cal	68	Do.
Hill, E. J	Connecticut	Still River Grange, Patrons of Husbandry, Mrs. D. Elmore, secretary.	Winston, Cal	30	May 19, 1896
		Potatuck Grange, 129, Patrons of Husbandry	Newtown, Conn	30	Do.
		Eureka Grange, 62, Patrons of Husbandry	New Hartford, Conn	30	Do.
		Washington Grange, 11, Patrons of Husbandry.	Washington Depot, Conn	30	Do.
		Rippowan Grange, 145, Patrons of Husbandry.	Highridge, Conn	30	Do.
		Silver Lake Grange, 135, Patrons of Husbandry.	Sharon, Conn	30	Do.
		Hope Grange, 20, Patrons of Husbandry	Torrington, Conn	30	Do.

N. L. Webster	Thomaston, Conn	50	Do.
W. E. Disbrow	Bridgeport, Conn	50	Do.
B. A. Hough	Danbury, Conn	50	Do.
W. S. Mead	Greenville, Conn	50	Do.
Hon. E. J. Hill	1421 K street northwest, Washington, D. C	440	Do.
Wichita Grange, 132, Patrons of Husbandry	Warren, Conn	30	Do.
Watertown Grange, 122, Patrons of Husbandry.	Watertown, Conn	30	Do.
Greenfield Hill Grange, 133, Patrons of Husbandry.	Greenfield Hill, Conn	30	Do.
Colebrook Grange, 82, Patrons of Husbandry	Colebrook, Conn	30	Do.
Harwinton Grange, 45, Patrons of Husbandry.	Harwinton, Conn	30	Do.
North Cornwall Grange, 32, Patrons of Husbandry.	North Cornwall, Conn	30	Do.
Hollenbeck Grange, 125, Patrons of Husbandry.	Canaan, Conn	30	Do.
Bethlehem Grange, 121, Patrons of Husbandry.	Bethlehem, Conn	30	Do.
Barkhamsted Grange, 98, Patrons of Husbandry.	Barkhamsted, Conn	30	Do.
Webutuck Grange, 86, Patrons of Husbandry.	Sharon, Conn	30	Do.
Goshen Grange, 142, Patrons of Husbandry	Goshen, Conn	30	Do.
Plymouth Grange, 72, Patrons of Husbandry.	Plymouth, Conn	30	Do.
Litchfield Grange, 107, Patrons of Husbandry.	Litchfield, Conn	30	Do.
Beacon Grange, 118, Patrons of Husbandry	do	30	Do.
Norfield Grange, 146, Patrons of Husbandry	Weston, Conn	30	Do.
Winchester Grange, 74, Patrons of Husbandry.	Winchester, Conn	30	Do.
Pleasant Valley Grange, 126, Patrons of Husbandry.	Woodbury, Conn	30	Do.
Brookfield Grange, 141, Patrons of Husbandry.	Brookfield, Conn	30	Do.
Farwell River Grange, 130, Patrons of Husbandry.	Huntington, Conn	30	Do.
Harmony Grange, 92, Patrons of Husbandry	Monroe, Conn	30	Do.
Toghhonnuck Grange, 100, Patrons of Husbandry.	Ellsworth, Conn	30	Do.
Housatonia Grange, 79, Patrons of Husbandry.	Stratford, Conn	30	Do.
Morris Grange, 119, Patrons of Husbandry	Morris, Conn	30	Do.
do	do	30	Do.
Trumbull Grange, 134, Patrons of Husbandry.	Trumbull, Conn	30	Do.
New Canaan Grange, 38, Patrons of Husbandry.	New Canaan, Conn	30	Do.
Miscellaneous addresses	Connecticut	180	Do.
East Canaan Grange	East Canaan, Conn	30	Do.
Hon. Henry Bernd	Danbury, Conn	50	Do.
Hon. Jno. W. Ferris	South Norwalk, Conn	50	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Hill, E. J	Connecticut	Hon. G. E. Lounsbury	Ridgefield, Conn	50	May 19, 1896
		Hon. J. H. Marigold	Bridgeport, Conn	50	Do.
		S. E. Hawley	do	50	Do.
		W. F. Kinney	New Milford, Conn	50	Do.
		E. A. Nellis	Winsted, Conn	50	Do.
		Hon. H. O. Overill	Washington, Conn	50	Do.
		Hon. D. T. Warner	Salisbury, Conn	50	Do.
		Hon. G. W. Smith	New Hartford, Conn	50	Do.
		John H. Sellech	Darien, Conn	30	Do.
		W. S. Wortman	Bethel, Conn	30	Do.
		Geo. W. Hurlbrett	Roxbury, Conn	30	Do.
		Bennett Seeley	Easton, Conn	30	Do.
		E. P. Brown	Danbury, Conn	30	Do.
		Jno. M. Nickerson	Redding Center, Conn	30	Do.
		Wm. B. Hill	Georgetown, Conn	30	Do.
		Albert Roberts	Kent Furnace, Conn	30	Do.
		D. H. Canfield	Bridgewater, Conn	30	Do.
		Jos. N. Cowles	Norfolk, Conn	30	Do.
		R. W. Keeler	Wilton, Conn	30	Do.
		G. A. Barnes	Sherman, Conn	30	Do.
		Rufus Wakeman	Saugatuck, Conn	30	Do.
		G. L. Rockwell	Ridgefield, Conn	50	Do.
		B. S. Keith	Norwalk, Conn	50	Do.
		E. E. Crowe	South Norwalk, Conn	50	Do.
		Hon. L. A. Cooke	Winstead, Conn	100	Do.
		Wm. B. Rudd	Lakeville, Conn	50	Do.
		Hon. O. R. Tyler	Torrington, Conn	50	May 21, 1896
		Hon. A. F. Rorabach	Canaan, Conn	50	Do.
		Edgar L. Pond	Terryville, Conn	50	Do.
		S. S. Randler	Bethel, Conn	50	Do.
		B. E. Cowperthwaite	Danbury, Conn	50	Do.
		Hon. S. E. Hawley	Bridgeport, Conn	50	Do.
		E. A. Nellis	Winsted, Conn	50	Do.
		Jno. Alsborme	Norwalk, Conn	50	Do.
		Bridgeport Brass Co	Bridgeport, Conn	25	Do.
		E. Hill	South Norwalk, Conn	25	Do.
		P. N. Knapp	do	25	Do.
		E. Beard	do	25	Do.
		C. H. Merritt	Danbury, Conn	49	Do.
		C. H. Boadley	Greenfield Hill, Conn	40	Do.
		Hon. A. C. Wheeler	Norwalk, Conn	20	Do.
		Miscellaneous individuals	Miscellaneous addresses in Connecticut	391	Do.
Hitt, R. R	Illinois	do	Illinois	3,000	May 5, 1896
Hooker, W. B	New York	Miscellaneous individuals	Miscellaneous addresses in Illinois	1,000	May 25, 1896

		Hon. W. B. Hooker	Committee on Rivers and Harbors, House of Representatives, Washington, D. C.	1,800	May 18, 1896
		do	Fredonia, N. Y	200	Do.
		Miscellaneous individuals	Miscellaneous addresses in New York	529	Do.
		do	do	100	May 20, 1896
		do	do	845	Do.
		Hon. W. B. Hooker	Fredonia, N. Y	155	May 27, 1896
		Miscellaneous individuals	Miscellaneous addresses in New York	1,000	Do.
Hopkins, A. J	Illinois	Hon. A. J. Hopkins	1818 Thirteenth street northwest, Washington, D. C.	148	May 5, 1896
		Miscellaneous addresses	Illinois	2,852	Do.
Howe, J. R	New York	Hon. J. R. Howe	118 Broadway, New York City	1,000	May 22, 1896
		do	278 Maryland avenue northeast, Washington, D. C.	3,000	May 13, 1896
Hunter, W. G	Kentucky	E. W. Fordyce	Bowling Green, Ky	200	May 12, 1896
		E. H. Mentz	Glasgow Junction, Ky	100	Do.
		Henry Shirly	Glasgow, Ky	30	Do.
		Jas. Hartmitt	do	30	Do.
		A. W. Harwell	Franklin, Ky	25	Do.
		Ben Miller	Elkton, Ky	917	Do.
		Tom Sympson	Franklin, Ky	200	Do.
		Col. E. R. Weir	Greenville, Ky	200	Do.
		Hon. Bradley Coffman	Russellville, Ky	200	Do.
		C. C. Harvey	Wilton Shade, Ky	50	Do.
		W. R. Dickinson	Temple Hill, Ky	50	Do.
		Miscellaneous individuals	Miscellaneous addresses in Kentucky	453	Do.
		Chas. Briggs	Bowling Green, Ky	51	Do.
		Hon. W. G. Hunter	102 B street northeast, Washington, D. C	494	Do.
		Jno. H. Gillean	Scottville, Ky	90	May 28, 1896
		S. W. Lindsay	Brownsville, Ky	90	Do.
		J. Bradley Coffman	Russellville, Ky	90	Do.
		Ben Miller	Elkton, Ky	90	Do.
		J. F. Taylor	Glasgow, Ky	90	Do.
		Hon. J. L. Butler	Morgantown, Ky	90	Do.
		Thos. Simpson	Franklin, Ky	90	Do.
		Hon. J. H. Neuman	Tompkinsville, Ky	90	Do.
		W. E. Miller	Burkesville, Ky	90	Do.
		Hon. E. M. Fordyer	Bowling Green, Ky	90	Do.
		J. S. Miller	Greenville, Ky	100	Do.
Hurley, D. M	New York	Hon. D. M. Hurley	29 B street northwest, Washington, D. C	3,000	May 16, 1896
		do	do	1,000	May 28, 1896
Hutcheson, J. C	Texas	Miscellaneously addressed	Texas	3,000	Apr. 27, 1896
Hyde, S. C	Washington	do	Washington	3,000	May 20, 1896
		do	do	1,000	May 28, 1896
		J. L. Reno Post, 474, and farmers	Spokane, Wash	50	Do.
		W. B. Hazen Post, 46, and farmers	Richville, Wash	50	Do.
		J. J. Lewis Post, 37, and farmers	Asotin, Wash	50	Do.
		J. B. Steadman Post, 24, and farmers	New Whatcom, Wash	50	Do.
		McDowell Post, 22, and farmers	Pomeroy, Wash	50	Do.
		Nathaniel Lyon Post, 19, and farmers	Colfax, Wash	50	Do.
		Stevens Post, 1, and farmers	Seattle, Wash	50	Do.
		Ellsworth Post, 2, and farmers	Vancouver, Wash	50	Do.
		Geo. H. Thomas Post, 5, and farmers	Olympia, Wash	50	Do.
		Phil Kearney, Post, 7, and farmers	Toledo, Wash	50	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Hyde, S. C	Washington	John Parsons Post, 11, and farmers	Ellensburg, Wash	50	May 28, 1896
		P. E. Berry	Waterville, Wash	50	Do.
		John T. Miller Post, 31	Seattle, Wash	100	Do.
		Sedgewick Post, 8	Spokane, Wash	100	Do.
		Custer Post 6	Tacoma, Wash	100	Do.
		Agricultural College and School of Science	Pullman, Wash	100	Do.
		Miscellaneously addressed	Washington	1,895	Do.
		Silas Casey Post, 74	Friday Harbor, Wash	25	Do.
		L. C. Hadd Post, 17	Puyallup, Wash	25	Do.
		Cushing Post, 56	Ballard, Wash	25	Do.
		Postmaster	Loomis, Wash	25	Do.
		T. T. Minor Post, 55	Winlock, Wash	25	Do.
		Whitman Post, 53	Pullman, Wash	25	Do.
Howard, M. W	Alabama	Hon. M. W. Howard	Temple Hotel, Washington, D. C	100	Apr. 24, 1896
		I. L. Brock	Center, Ala	100	Do.
		R. R. Savage	do	100	Do.
		Hon. Thos. McHann	Boaz, Ala	100	Do.
		Hon. W. T. Gast	Russellville, Ala	100	Do.
		Judge T. A. Street	Guntersville, Ala	100	Do.
		Emil Ahlrichs	Cullman, Ala	200	Do.
		Hon. J. S. Morigue	Gadsden, Ala	200	Do.
		Hon. Noah Hood	Ashville, Ala	100	Do.
		Jno. S. Curtis	Double Springs, Ala	100	Do.
		Miscellaneous individuals	Miscellaneous addresses in Alabama	800	Do.
Howell, B. F	New Jersey	Care of Wm. Richardson	1221 H street northeast, Washington, D. C	1,000	May 23, 1896
		O. C. Herbert	Marlboro, N. J	152	May 12, 1896
		Monmouth Inquirer	Freehold, N. J	152	Do.
		Frank W. Somers	Somerville, N. J	152	Do.
		Somerset Messenger	do	152	Do.
		Miscellaneous individuals	Miscellaneous addresses in New Jersey	2,088	Do.
		The Fredonia	New Brunswick, N. J	304	Do.
Hubbard, J. D	Missouri	Hon. J. D. Hubbard	Missouri	3,600	May 7, 1896
		Miscellaneous individuals	Miscellaneous addresses in Missouri	1,000	May 23, 1896
		Postmaster	Versailles, Mo	200	May 28, 1896
		do	Richland, Mo	200	Do.
		do	Aurora Springs, Mo	200	Do.
		do	Barnett, Mo	200	Do.
		do	Crittenden, Mo	100	Do.
		do	Stoutland, Mo	100	Do.
		do	Eldon, Mo	200	Do.
		do	Proctor, Mo	200	Do.
		do	Linn Creek, Mo	200	Do.
		do	Bagnell, Mo	200	Do.
		do	Tuscumbia, Mo	200	Do.

Huff, Geo. F	Pennsylvania	Hon. Geo. F. Huff	Greensburg, Pa	2,270	May 6, 1896
		Miscellaneous individuals	Miscellaneous addresses in Pennsylvania	730	Do.
		do	do	1,000	May 25, 1896
Hulick, Geo. W	Ohio	do	Miscellaneous addresses in Ohio	2,787	May 12, 1896
		Hon. Geo. W. Hulick	House of Representatives, Washington, D. C	213	Do.
		Miscellaneous individuals	Miscellaneous addresses in Ohio	1,000	May 28, 1896
Huling, J. H	West Virginia	Hon. J H. Huling	House of Representatives, Washington, D C	1,469	Do.
		Miscellaneous individuals	Miscellaneous addresses in West Virginia	1,531	May 8, 1896
		Hon. Ayel Ford	Hinton, W. Va	100	May 25, 1896
		J. R. Hill	Lockwood, W. Va	100	Do.
		C. H. Payne	Montgomery, W. Va	100	Do.
		O. A. Petty	Charleston, W. Va	100	Do.
		Hon. W. R. Reed	Clay, W. Va	100	Do.
		R. J. Lovelace	Ronceverte, W. Va	100	Do.
		H. A. Cordon	Logan, W. Va	100	Do.
		J. W. McDowell	Second Creek, W. Va	100	Do.
		Hon. E. P. Rucker	Welch, W. Va	100	Do.
		C. P. Stover	Clear Creek, W. Va	100	Do.
Hull, J. A. T	Iowa	Miscellaneous individuals	Miscellaneous addresses in Iowa	2,909	May 12, 1896
		Hon. J. A. T. Hull	Committee on Military Affairs, House of Representatives.	100	Do.
		Miscellaneous individuals	Miscellaneous addresses in Iowa	1,000	May 22, 1896
Hyde, S. C	Washington	Sickles Post, No. 57	Vashon, Wash	25	May 28, 1896
		J. J. Andrews Post, No. 61	Oakesdale, Wash	25	Do.
		Hovey Post, No. 79	Snoqualmie, Wash	25	Do.
		Union Post, No. 70	Chewelah, Wash	25	Do.
		C. M. Kellogg Post, No. 58	West Ferndale, Wash	25	Do.
		Postmaster	Conconully, Wash	25	Do.
		C. W. H. Bently Post, No. 50	Crescent, Wash	25	Do.
		C. R. Anderson Post, No. 59	Fairhaven, Wash	25	Do.
		John Buford Post, No. 89	Everett, Wash	25	Do.
		U. S. Grant Post, No. 96	Orting, Wash	25	Do.
		Rush Post, No. 93	Harrington, Wash	25	Do.
		Washington State Hospital	Medical Lake, Wash	25	Do.
		Garfield Post, No. 13	Montesano, Wash	25	Do.
		J. A. Winslow Post, No. 87	Excelsior, Wash	25	Do.
		E. E. Crass Post, No. 90	Shelton, Wash	25	Do.
		Everett Post, No. 73	Sumner, Wash	25	Do.
		Morton Post, No. 10	Snohomish, Wash	25	Do.
		Meade Post, No. 9	North Yakima, Wash	25	Do.
		Buchanon Post, No. 14	Sprague, Wash	25	Do.
		Farragut Post, No. 15	Port Townsend, Wash	25	Do.
		Kit Carson Post, No. 49	Kelso, Wash	25	Do.
		Grover Post, No. 51	Auburn, Wash	25	Do.
		Washington Post, No. 52	Hoquiam, Wash	25	Do.
		H. A. Miles Post, No. 45	Waterville, Wash	25	Do.
		W. S. Hancock Post, No. 43	Cosmopolis, Wash	25	Do.
		Pacific Post, No. 48	Port Angeles, Wash	25	Do.
		C. M. Reed Post, No. 54	Orting, Wash	25	Do.
		Sheridan Post, No. 44	Tacoma, Wash	25	Do.
		Lynch Post, No. 32	Lynden, Wash	25	Do.
		R. G. McCook Post, No. 39	Sherman, Wash	25	Do.
		William H. Seward Post, No. 33	Juneau, Wash	25	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Hyde, S. C	Washington	Reynolds Post, No. 32	Blaine, Wash	25	May 28, 1896
		O. M. Mitchell Post, No. 30	Camas, Wash	25	Do.
		D. A. Russell Post, No. 35	Mount Vernon, Wash	25	Do.
		W. H. Van Lew Post	Dayton, Wash	25	Do.
		Major Anderson Post, No. 29	Palouse, Wash	25	Do.
		Canby Post, No. 27	Ilwaco, Wash	25	Do.
		Wallace Post, No. 64	Springdale, Wash	25	Do.
		General Milroy Post, No. 62	Latah, Wash	25	Do.
		George Crook Post, No. 63	Aberdeen, Wash	25	Do.
		Fremont Post, No. 69	South Bend, Wash	25	Do.
		Emory Post, No. 68	Anacortes, Wash	25	Do.
		Stephenson Post, No. 67	Sumas City, Wash	25	Do.
		Ad. Porter Post, No. 66	Mossy Rock, Wash	25	Do.
		Postmaster	Dixie, Wash	25	Do.
		J. A. Reynolds Post, No. 71	Buckley, Wash	25	Do.
		A. J. Smith Post, No. 12	Wayside, Wash	25	Do.
		Chaplain Post, No. 92	Cooperville, Wash	25	Do.
		Larrabee Post, No. 18	Laconner, Wash	25	Do.
		McPherson Post, No. 12	Kalama, Wash	25	Do.
		Lincoln Post, No. 4	Walla Walla, Wash	25	Do.
		Joe Hooker Post, No. 25	Chehalis, Wash	25	Do.
		Balser Post, No. 20	Goldondale, Wash	25	Do.
		Lindsay Post, No. 34	Pine City, Wash	25	Do.
		E. J Houghton Post, No. 75	Harvey, Wash	25	Do.
		Burnham Post, No. 16	Kent, Wash	25	Do.
		Hon. J. H. Chase	Wenatchie, Wash	25	Do.
		Fred. Lander Post, No. 88	Farmington, Wash	25	Do.
		E. M. Stanton Post, No. 86	Haller City, Wash	25	Do.
		Commodore Foote Post, No. 84	Sidney, Wash	25	Do.
		Postmaster	Pomeroy, Wash	25	Do.
		General Saunders Post, No. 83	Kelso, Wash	25	Do.
		T. P. Price Post, No. 82	Centralia, Wash	25	Do.
		H. R. Loomis Post, No. 80	Gig Harbor, Wash	25	Do.
		Worthington Post, No. 8	Elma, Wash	25	Do.
		J. A. Logan Post, No. 16	Garfield, Wash	25	Do.
Irby, J. L. M	South Carolina	Hon. J. L. M. Irby	Care R. J. Gantt, 716 Eleventh street northwest, Washington, D. C.	78	Apr. 29, 1896
		Miscellaneously addressed	South Carolina	2,922	Do.
Jones, W. A	Virginia	Hon. W. A. Jones	226 New Jersey avenue southeast, Washington, D. C.	3,000	May 4, 1896
		do	Varnum Hotel, Washington, D. C	1,000	May 22, 1896
Jones, J. K	Arkansas	Hon. J. K. Jones	Maltby Building, Washington, D. C	1,000	May 25, 1896
		do	do	116	May 27, 1896
		Miscellaneously addressed	Arkansas	2,884	Do.

Jones, J. P	Nevada	do	Nevada	2,929	May 20, 1896
		Hon. J. P. Jones	United States Senate	71	Do.
Johnson, H. U	Indiana	Hon. H. U. Johnson	810 Twelfth street northwest, Washington, D. C	500	May 6, 1896
		Miscellaneously addressed	Indiana	2,500	Do.
		Benj. Stratton	Richmond, Ind	333	May 25, 1896
		Jonas Scholl	Lyons Station, Ind	333	Do.
		Thos. Burnside	Liberty, Ind	334	Do.
Johnson, G. L	California	Hon. G. L. Johnson	House of Representatives, Washington, D. C	186	May 19, 1896
		Miscellaneously addressed	California	2,814	Do.
Joy, C. F	Missouri	Hon. C. F. Joy	1629 Sixteenth street northwest, Washington, D. C	1,500	May 8, 1896
		Miscellaneously addressed	Missouri	1,250	Do.
		Hon. C. F. Joy	House of Representatives, Washington, D. C	250	Do.
		Miscellaneously addressed	Missouri	1,000	May 25, 1896
Jenkins, J. J	Wisconsin	do	Wisconsin	3,000	May 15, 1896
		do	do	1,001	May 20, 1896
		do	do	154	Do.
		do	do	1,000	May 25, 1896
Johnson, M. N	North Dakota	do	North Dakota	3,000	May 14, 1896
		do	do	173	May 20, 1896
		do	do	990	May 25, 1896
		do	do	220	May 28, 1896
		Postmaster	Straubville, N. Dak	25	Do.
		do	Winchester, N. Dak	25	Do.
		do	Weible, N. Dak	25	Do.
		do	Scoville, N. Dak	25	Do.
		do	Kelleys, N. Dak	25	Do.
		do	Pittsburg, N. Dak	25	Do.
		do	Praha, N. Dak	25	Do.
		do	Sharon, N. Dak	30	Do.
		do	Oakdale, N. Dak	30	Do.
		do	Trysil, N. Dak	35	Do.
		do	Sherbrooke, N. Dak	40	Do.
		do	Silvista, N. Dak	45	Do.
		Postmaster	Sanborn, N. Dak	50	Do.
		do	Fullerton, N. Dak	50	Do.
		do	Slaughter, N. Dak	50	Do.
		do	St. Thomas, N. Dak	60	Do.
		do	Towner, N. Dak	65	Do.
		do	Tarsus, N. Dak	75	Do.
Kyle, J. C	Mississippi	Miscellaneously addressed	Mississippi	1,000	May 21, 1896
		do	do	2,028	Apr. 27, 1896
		Hon J. C. Kyle, Hotel Varnum	Washington, D. C	72	Do.
Kyle, J. H	South Dakota	Geo. Mathews	Armour, S. Dak	100	May 15, 1896
		D. A. Cochrane	Brooking, S. Dak	100	Do.
		S. H. Bronson	Howard, S. Dak	100	Do.
		J. Truechild	Mellette, S. Dak	100	Do.
		L. D. Sweetland	Miller, S. Dak	100	Do.
		J. E. Kelly	Flandreau, S. Dak	100	Do.
		W. E. Graybill	Chamberlain, S. Dak	100	Do.
		H. S. Volkmar	Millbank, S. Dak	100	Do.
		Geo. W. Latin	Desmet, S. Dak	100	Do.
		J. P. Croal	Wilmot, S. Dak	100	Do.
		A. D. Tinsley	Sioux Falls, S. Dak	100	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Kyle, J. H	South Dakota	W. E. Kidd	Aberdeen, S. Dak	100	May 15, 1896
		H. A. Pike	Tyndal, S. Dak	100	Do.
		Capt. S. V. Arnold	Roscoe, S. Dak	100	Do.
		R. E. Dowdel	Artesian, S. Dak	100	Do.
		Hon. J. N. Smith	Sullivan, S. Dak	100	Do.
		Freeman Knowles	Deadwood, S. Dak	100	Do.
		J. H. Kipp	Mound City, S. Dak	100	Do.
		Arthur Linn	Canton, S. Dak	100	Do.
		J. F. Kelly	Webster, S. Dak	100	Do.
		A. Sherin	Britton, S. Dak	100	Do.
		L. D. F. Poore	Yankton, S. Dak	100	Do.
		Union Labor Gazette	Mitchell, S. Dak	100	Do.
		F. M. Hopkins	Aberdeen, S. Dak	100	Do.
		Thos. Ayers	Vermilion, S. Dak	100	Do.
		Hon. J. H. Kyle, United States Senate	Washington, D. C	113	Do.
		Miscellaneously addressed	South Dakota	387	Do.
		Stephen Jones	Roswell, S. Dak	50	May 27, 1896
		F Child	Mellette, S. Dak	50	Do.
		O. C. Henry	Longford, S. Dak	50	Do.
		W. E. Kidd	Aberdeen, S. Dak	50	Do.
		F. De Costa	Butler, S. Dak	50	Do.
		L. D. Sweetland	Miller, S. Dak	50	Do.
		E. C. Johnston	Mitchell, S. Dak	50	Do.
		A. E. Else	Doland, S. Dak	50	Do.
		A. D. Lindsley	Sioux Falls, S. Dak	50	Do.
		C. W. Moore	Beresford, S. Dak	50	Do.
		F. G. Bohri	Clark, S. Dak	50	Do.
		C. E. Kittenger	Powell, S. Dak	50	Do.
		Geo. Latin	Desmet, S. Dak	50	Do.
		J. E. Kelley	Flandreau, S. Dak	50	Do.
		A. L. Peterman	Parker, S. Dak	50	Do.
		J. J. Batterton	Wilmot, S. Dak	50	Do.
		Hon. Jno. Bean	Armour, S. Dak	50	Do.
		Leroy Walker	Castalia, S. Dak	50	Do.
		J. K. Kipp	Mound City, S. Dak	50	Do.
		C. A. Tripp	Hillsview, S. Dak	50	Do.
Kiefer, A. R	Minnesota	Hon. A. R. Kiefer	201 A street southeast, Washington, D. C	453	May 14, 1896
		Miscellaneously addressed	Minnesota	2,547	Do.
		Hon. A. R. Kiefer	201 A street southeast, Washington, D. C	1,000	May 28, 1896
Kem, O. M	Nebraska	Miscellaneously addressed	Nebraska	3,000	May 8, 1896
		do	do	45	May 20, 1896
		Hon. O. M. Kem	House of Representatives, Washington, D. C	1,000	May 22, 1896
Kendall, J. M	Kentucky	Miscellaneously addressed	Kentucky	3,000	May 12, 1896
		Gov. Evans	Camptown, Ky	50	May 28, 1896

		Jas. Rose	do	50	Do.
		F. C. Hatcher	Pikeville, Ky	100	Do.
		Davidson Bros	Prestonburg, Ky	100	Do.
		F. A. Hopkins	do	100	Do.
		E. L. Kaizee	Paintsville, Ky	100	Do.
		J. B. Hannah	Sandy Hook, Ky	100	Do.
		W. M. Kendall	West Liberty, Ky	100	Do.
		H. F. Pieralt	Hazel Green, Ky	100	Do.
		Geo. Duncanson	Stanton, Ky	100	Do.
		J. J. Byrne	Frenchburg, Ky	100	Do.
Kerr, W. S	Ohio	Hon. Wm. A. Branon	Elyria, Ohio	50	May 12, 1896
		L. E. Yocum	Hayesville, Ohio	50	Do.
		J. E. Gadon	Mansfield, Ohio	75	Do.
		Hon. W. M. Koens	Mount Vernon, Ohio	200	Do.
		L. E. Yocum	Hayesville, Ohio	200	Do.
		The Lorain County Reporter	Elyria, Ohio	200	Do.
		The Norwalk Reflector	Norwalk, Ohio	200	Do.
		Hon. T. M. Beer	Ashland, Ohio	200	Do.
		Hon. Geo. Hildebrand	do	200	Do.
		I. M. Mathews	Mifflin, Ohio	100	Do.
		Harry S. Griffith	Mount Gilead, Ohio	200	Do.
		The Norwalk Chronicle	Norwalk, Ohio	100	Do.
		J. E. LaDow	Mansfield, Ohio	100	Do.
		The Republican	Mount Vernon, Ohio	100	Do.
		Miscellaneously addressed	Ohio	675	Do.
		Hon. W. S. Kerr	1631 O street northwest, Washington, D. C	175	Do.
		Jno. Barr	Lucas, Ohio	25	Do.
		Chas. B. Swigert	Oak Hill, Kans	25	Do.
		S. B. Geiter	Lucas, Ohio	25	Do.
		Saml. Barr	do	25	Do.
		Hon. W. S. Kerr	1631 O street northwest, Washington, D. C	25	Do.
		E. M. Freeman	Lorain, Ohio	50	Do.
		Miscellaneously addressed	Ohio	134	May 20, 1896
		do	do	92	May 28, 1896
Kirkpatrick, S. S	Kansas	Hon. S. S. Kirkpatrick	1378 Harvard street northwest, Washington, D. C.	3,000	May 2, 1896
		do	do	1,378	May 23, 1896
Kleberg, R	Texas	County judge of Duval County	San Diego, Tex	74	May 27, 1896
		County judge of Encinal County	Encinal, Tex	74	Do.
		County judge of Frio County	Pearsall, Tex	74	Do.
		County judge of Atasco County	Pleasanton, Tex	74	Do.
		County judge of Hidalgo County	Hidalgo, Tex	74	Do.
		County judge of Jackson County	Edna, Tex	74	Do.
		County judge of Lasalle County	Cotulla, Tex	74	Do.
		County judge of Live Oak County	Oakville, Tex	74	Do.
		County judge of McMullin County	Tilden, Tex	74	Do.
		County judge of Refugio County	Refugio, Tex	74	Do.
		County judge of Zapata County	Carrizo, Tex	74	Do.
		County judge of Zavalla County	Batesville, Tex	74	Do.
		County judge of Wharton County	Wharton, Tex	74	Do.
		County judge of Uvalde County	Uvalde, Tex	74	Do.
		County judge of Starr County	Rio Grande, Tex	74	Do.
		County judge of San Patricio County	Linton, Tex	74	Do.
		County judge of Cameron County	Brownsville, Tex	243	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Kleberg, R	Texas	County judge of Goliad County	Goliad, Tex	243	May 27, 1896
		County judge of Karnes County	Karnes City, Tex	243	Do.
		County judge of Webb County	Laredo, Tex	233	Do.
		Connty judge of Dimmit County	Carrizo Springs, Tex	75	Do.
		County judge of Calhoun County	Port Lavaca, Tex	75	Do.
		County judge of Guadalupe County	Seguin, Tex	242	Do.
		County judge of Wilson County	Floresville, Tex	242	Do.
		County judge of Bee County	Beesville, Tex	242	Do.
		County judge of Victoria County	Victoria, Tex	242	Do.
		County judge of Dewitt County	Cuero, Tex	242	Do.
		County judge of Aransas County	Rockport, Tex	242	Do.
		County judge of Neuces County	Corpus Christi, Tex	242	Do.
		Hon. C. L. Caynor, county judge	San Diego, Tex	200	May 28, 1896
Knox, W. S	Massachusetts	Hon. W. S. Knox	2027 Q street northwest, Washington, D. C	3,000	May 13, 1896
		do	do	1,000	May 23, 1896
Kulp, M. H	Pennsylvania	Miscellaneously addressed	Pennsylvania	3,000	May 18, 1896
		do	do	995	May 28, 1896
		do	do	1,000	Do.
Leisenring, J	do	Miscellaneously addressed	do	3,000	May 12, 1896
		do	do	10	May 20, 1896
		Hon. John Leisenring	Willard's Hotel, Washington, D. C	1,000	May 22, 1896
Lefever, Jacob	New York	Hon. Jacob Lefever	Newpaltz, N. Y	230	May 18, 1896
		Miscellaneously addressed	New York	2,770	Do.
		do	do	22	May 20, 1896
		Hon. Jacob Lefever	Newpaltz, N. Y	1,000	May 22, 1896
Lodge, H. C	Massachusetts	Hon. H. C. Lodge	Maltby Building, Washington, D. C	3,000	May 13, 1896
Layton, F. C	Ohio	Hon. F. C. Layton	Equity Building, Washington, D. C	3,000	May 2, 1896
		do	do	1,000	May 21, 1896
Lindsay, Wm	Kentucky	Hon. Ben. Johnson	Bardstown, Ky	100	May 8, 1896
		Hon. T. M. Gossom	Oakland, Ky	100	Do.
		Times	Elkton, Ky	100	Do.
		Hon. M. H. Wright	Columbus, Ky	50	Do.
		Hon. E. K. Thomas	North Middle, Ky	50	Do.
		Ben. F. Farmer	Frankfort, Ky	100	Do.
		Hon. Wm. Lindsay	Maltby Building, Washington, D. C	750	Do.
		Miscellaneously addressed	Kentucky	1,700	Do.
		Hon. J. B. Alexander	Sharpsburg, Ky	50	Do.
		Ledger	Murray, Ky	40	May 25, 1896
		Editor Banner	Princeton, Ky	40	Do.
		Editor Reporter	Augusta, Ky	40	Do.
		Pioneer	Shepherdsville, Ky	40	Do.
		News	Cloverport, Ky	40	Do.
		Editor Independent	Warsaw, Ky	40	Do.
		Editor Times-Democrat	Flemingsburg, Ky	40	Do.

		Editor Press	Marion, Ky	40	Do.
		Democrat	Carrollton, Ky	40	Do.
		Editor News	do	40	Do.
		Editor Monitor	Mayfield, Ky	40	Do.
		Editor Mirror	do	40	Do.
		Tale of Two Cities	Kuttawa, Ky	40	Do.
		Editor Herald	Hodgensville, Ky	40	Do.
		Editor News	Louisa, Ky	40	Do.
		Editor Ledger	Calhoun, Ky	40	Do.
		Editor Messenger	Brandenburg, Ky	40	Do.
		Editor Enterprise	Lebanon, Ky	40	Do.
		Editor Hustler	Madisonville, Ky	10	Do.
		Editor Courier	Saintsville, Ky	40	Do
		Editor Tribune	Benton, Ky	40	Do.
		Editor Record Homestead	Lancaster, Ky	40	Do
		Editor Courier	Williamstown, Ky	40	Do.
		Editor Star	Bondville, Ky	40	Do.
		Editor New Era	Lagrange, Ky	40	Do.
Lacey, J. F	Iowa	Hon. J. F. Lacey	House of Representatives, Washington, D. C	375	May 20, 1896
		Miscellaneously addressed	Iowa	2,625	Do.
		do	do	93	May 21, 1896
		Hon. J. F. Lacey	House of Representatives, Washington, D. C	907	Do.
Latimer, A. C	South Carolina	Miscellaneously addressed	South Carolina	3,000	Apr. 29, 1896
		do	do	1,000	Apr. 30, 1896
		do	do	881	May 20, 1896
		do	do	1,000	May 27, 1896
		do	do	1,000	May 28, 1896
Loudenslager, H. C	New Jersey	Hon. H. C. Loudenslager	House of Representatives, Washington, D. C	3,000	Apr. 29, 1896
		do	do	505	May 28, 1896
Low, P. B	New York	Hon. P. B. Low	do	3,000	May 18, 1896
		do	do	3,000	May 13, 1896
Leighty, J. D	Indiana	Miscellaneously addressed	Indiana	1,000	May 22, 1896
		do	do	2,971	May 9, 1896
		Hon. J. D. Leighty	Willards Hotel, Washington, D. C	29	Do.
		J. T. Jackson	Columbia City, Ind	50	May 28, 1896
		Eugene Chavey	Land Grange No. 1264, Indiana	50	Do.
		J. E. Bear	Columbia City Grange No. 18, Indiana	50	Do.
		Miscellaneously addressed	Indiana	44	Do.
		Hon. J. D. Leighty	House of Representatives, Washington, D. C	550	Do.
		W. L. Surrier	Columbia City Grange, Indiana	50	Do.
		James S. Love	Butler Grange No. 2074, Indiana	50	Do.
		E. C. Berry	Columbia City Grange, Indiana	50	Do.
		D. C. Salisbury	Orland Grange, Indiana	50	Do.
		Mrs. Anna Seaman	Brighton Grange No. 887, Indiana	50	Do.
Lawson, T. G	Georgia	Hon. T. G. Lawson	1460 Corcoran street, Washington, D. C	375	Apr. 29, 1896
		Ladies Garden Club	Athens, Ga	150	Do.
		Miscellaneously addressed	Georgia	2,475	Do.
		Ladies Garden Club	Union Point, Ga	100	May 28, 1896
		J. L. Harper	12 I street northeast, Washington, D. C	29	Do.
Loud, E. F	California	Hon. E. F. Loud	Committee on the Post-Office and Post-Roads, House of Representatives, Washington, D. C.	3,000	May 20, 1896
		do	do	1,000	May 21, 1896
Lockhart, J. A	North Carolina	Hon. J. A. Lockhart	Metropolitan Hotel, Washington, D. C	1,801	May 1, 1896

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Lockhart, J. A	North Carolina	Miscellaneously addressed	North Carolina	1,199	May 1, 1896
		Hon. J. A. Lockhart	Metropolitan Hotel, Washington, D. C	1,063	May 22, 1896
Livingston, L. F	Georgia	Miscellaneously addressed	Georgia	2,311	Apr. 23, 1896
		Hon. L. F. Livingston	House of Representatives, Washington, D. C	689	Do.
		do	Conyers, Ga	1,000	May 21, 1896
Long, C. J	Kansas	Miscellaneously addressed	Kansas	588	May 6, 1896
		Hon. C. J. Long	2015 Fourteenth street northwest, Washington, D. C.	2,412	Do.
		Miscellaneously addressed	Kansas	1,000	May 20, 1896
		do	do	1,611	May 28, 1896
Little, J. S	Arkansas	Hon. J. S. Little	Hotel Varnum, Washington, D. C	3,000	Apr. 23, 1896
		Miscellaneously addressed	Arkansas	983	May 28, 1896
Linton, W. S	Michigan	do	Michigan	3,000	May 16, 1896
		Hon. W. S. Linton	House of Representatives, Washington, D. C	1,000	May 22, 1896
Lester, R. E	Georgia	Miscellaneously addressed	Georgia	2,537	Apr. 23, 1896
		Hon. R. E. Lester	Cairo Hotel, Washington, D. C	463	Do.
		Miscellaneous individuals	Georgia	1,000	May 23, 1896
Lorimer, Wm	Illinois	Hon. Wm. Lorimer	House of Representatives, Washington, D. C	3,000	Apr. 29, 1896
		do	Committee on Labor, House of Representatives, Washington, D. C.	1,000	May 22, 1896
Linney, R. Z	North Carolina	Hon. R. Z. Linney	921 G street northwest, Washington, D. C	366	Apr. 23, 1896
		Miscellaneously addressed	North Carolina	2,634	Do.
		do	921 G street northwest, Washington, D. C	500	May 22, 1896
		Hon. R. Z. Linney	111 Second street northwest, Washington, D. C	500	Do.
Lewis, J. W	Kentucky	Hon. J. W. Lewis	221 First street northeast, Washington, D. C	3,000	May 1, 1896
		do	do	1,000	May 22, 1896
Leonard, F. C	Pennsylvania	Hon. F. C. Leonard	House of Representatives, Washington, D. C	158	May 9, 1896
		Miscellaneously addressed	Pennsylvania	2,842	Do.
		do	do	503	May 20, 1896
		do	do	175	May 28, 1896
McBride, Geo. W	Oregon	Miscellaneous individuals	Miscellaneous addresses in Oregon	1,538	May 20, 1896
		Hon. Geo. W. McBride	United States Senate, Washington, D. C	1,462	Do.
		do	do	1,000	May 23, 1896
McMillan, Jas	Michigan	Thomas White	Alpena, Mich	200	May 20, 1896
		Miscellaneous individuals	Miscellaneous addresses in Michigan	80	Do.
		W. E. Holt	Bellevue, Mich	200	May 23, 1896
		S. Y. Hill	Albion, Mich	100	Do.
		David Gorton	Gorton, Mich	100	Do.
		F. A. Roethlesberger	Allen, Mich	100	Do.
		P. I. Higgins	Marshall, Mich	100	Do.
		J. C. Clark, secretary State Grange	Church, Mich	100	Do.
		Jesse Hamilton, secretary State Grange	Scotts, Mich	100	Do.
		Philo Murniston	Ranson, Mich	100	Do.
		W. F. Shepard	South Allen, Mich	100	Do.

		Miscellaneous individuals	Miscellaneous addresses in Michigan	172	May 28, 1896
Mantle, Lee	Montana	do	do	2,871	May 15, 1896
		Hon. Lee Mantle	United States Senate, Washington, D. C	129	Do.
		G. F. Reek	Phillipsburg, Granite County, Mont	100	May 23, 1896
		S. M. Emery	Bozeman, Mont	100	Do.
		Hon. Michael Therriault	Kalispell, Mont	100	Do.
		E. J. McLean	Redlodge, Mont	100	Do.
		Hon. L. E. Williams	Stevensville, Mont	100	Do.
		D. J. Bailey	Missoula, Mont	100	Do.
		Hon. W. H. Sales	Bozeman, Mont	100	Do.
		Mr. A. J. Hylton	Miles City, Mont	100	Do.
		Barclay Jones	Virginia City, Mont	100	Do.
		Eugene Picot	Boulder, Mont	100	Do.
Martin, T. S	Virginia	Hon. T. S. Martin	United States Senate, Washington, D. C	248	May 12, 1896
		Miscellaneous individuals	Miscellaneous addresses in Virginia	2,752	Do.
		do	do	690	May 20, 1896
		do	do	1,000	May 25, 1896
Mills, R. Q	Texas	do	Miscellaneous addresses in Texas	2,929	Apr. 27, 1896
		Hon. R. Q. Mills	1746 S street northwest, Washington, D. C	71	Do.
Mitchell, Jno. H	Oregon	Hon. Jno. H. Mitchell	Committee on Privileges and Elections, United States Senate, Washington, D C.	2,062	May 20, 1896
		Miscellaneous individuals	Miscellaneous addresses in Oregon	938	Do.
		do	do	869	May 28, 1896
Mitchell, Jno. L	Wisconsin	do	Miscellaneous addresses in Wisconsin	212	May 16, 1896
		Nelson Bower, postmaster	Darlington, Wis	50	Do.
		Annie E. Kieyman, postmaster	Broadhead, Wis	50	Do.
		Geo. W. Bishop, postmaster	Woxewoc, Wis	50	Do.
		John Dawe	Edgerton, Wis	50	Do.
		W. H. H. Cash, postmaster	New Lisbon, Wis	50	Do.
		Superintendent Williamsburg Station	Milwaukee, Wis	50	Do.
		Postmaster	Wanwatosa, Wis	50	Do.
		James H. Hopkins, postmaster	Evansville, Wis	50	Do.
		Antoinette Brewster, postmaster	Shullsburg, Wis	50	Do.
		Superintendent S. S. Station	Milwaukee, Wis	50	Do.
		Jas. G. Wickham	Beloit, Wis	50	Do.
		Edward F. Rakow	Burlington, Wis	50	Do.
		Superintendent Bay View Station	Milwaukee, Wis	50	Do.
		E. B. Budlong	Clinton, Wis	50	Do.
		Postmaster	Rochester, Wis	50	Do.
		John Passage	Delevan, Wis	50	Do.
		Postmaster	White Fish Bay, Wis	50	Do.
McCall, S. W	Massachusetts	Hon. S. W. McCall	Committee on Elections, No. 3, House of Representatives, Washington, D C.	1,000	May 18, 1896
		do	House of Representatives, Washington, D C	1,000	May 25, 1896
McCleary, J. T	Minnesota	Miscellaneous individuals	Miscellaneous addresses in Minnesota	3,000	May 15, 1896
		do	do	1,000	May 23, 1896
McClellan, Geo. B	New York	Hon. Geo. B. McClellan	1445 Rhode Island avenue, Washington, D. C	3,000	May 13, 1896
		do	do	1,000	May 22, 1896
McClnre, A. S	Ohio	Hon. A. S. McClure	1931 Sixteenth street northwest, Washington, D C	67	May 11, 1896
		C. B. McCoy	Coshocton, Ohio	300	Do.
		Rev. J. Proctor Davis	Keen, Ohio	30	Do.
		Capt. Lemuel Jeffries	Wooster, Ohio	30	Do.
		J. B. Gish	Rittman, Ohio	50	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
McClure, A. S.	Ohio	Capt. E. Z. Hays	Warsaw, Ohio	50	May 11, 1896
		L. Zimmerman	Zoar, Ohio	50	Do.
		Given Post, Grand Army of the Republic	Wooster, Ohio	75	Do.
		David Davis	Conesville, Ohio	75	Do.
		W. S. Needham	Pataskala, Ohio	100	Do.
		John T. Duff	New Comerstown, Ohio	100	Do.
		J. M. Ickes	Newark, Ohio	200	Do.
		Capt. W. C. Lyons	do	200	Do.
		T. C. Reynolds	Wooster, Ohio	150	Do.
		Henry White	Millersburg, Ohio	150	Do.
		Capt. Geo. N. Bowers	New Philadelphia, Ohio	150	Do.
		W. H. Stout	Uhrichsville, Ohio	150	Do.
		W. W. Scott	Canal Dover, Ohio	150	Do.
		J. L. McIlvaine	New Philadelphia, Ohio	150	Do.
		Hon. E. B. Eshelman	Wooster, Wayne County, Ohio	150	Do.
		Samuel Moore	New Philadelphia, Ohio	150	Do.
		W. A. Koons	do	150	Do.
		Miscellaneous individuals	Miscellaneous addresses in Ohio	323	Do.
		do	do	16	May 21, 1896
		Capt. James W. Owens	Newark, Ohio	75	Do.
		Capt. W. C. Lyons	do	99	Do.
		T. C. Reynolds	Wooster, Ohio	100	Do.
		J. C. Fisher	Coshocton, Ohio	100	Do.
		Dr. A. E. Steppfield	Doylestown, Ohio	25	Do.
		N. J. Haskinson	Port Washington, Ohio	25	Do.
		Col. Pren. Metham	Nellie, Ohio	30	Do.
		David Davis	Conesville, Ohio	30	Do.
		Rev. I. N. Kieffer	Wooster, Ohio	50	Do.
		J. B. Gish	Rittman, Ohio	50	Do.
		L. Zimmerman	Zoar, Ohio	50	Do.
		Geo. Cooper	Cooperdale, Ohio	50	Do.
		Capt. Robt. Liggett	Nashville, Ohio	50	Do.
		Mrs. Isaac R. Hill	408 A street southeast, Washington, D. C.	50	Do.
		W. W. Scott	Canal Dover, Ohio	50	Do.
		Capt. E. Z. Hays	Warsaw, Ohio	50	Do.
		Hon. W. S. Needham	Pataskala, Ohio	50	Do.
		J. M. Ickes	Newark, Ohio	50	Do.
McCormick, R. C.	New York	Hon. R. C. McCormick	Committee on Education, House of Representatives, Washington, D. C.	3,000	May 13, 1896
		do	House of Representatives, Washington, D. C	1,000	May 22, 1896
McCreary, J. B.	Kentucky	Miscellaneous individuals	Miscellaneous addresses in Kentucky	2,690	May 8, 1896
		Hon. J. B. McCreary	Care Ambrose F. Dudley, House of Representatives, Washington, D. C.	310	Do.
		do	Cairo Hotel, Washington, D. C.	200	May 28, 1896

		Mr. C. E. Hooker	Bureau of Engraving and Printing, Washington, D. C.	30	Do.
Mitchell, Jno. L.	Wisconsin	S. I. Henderson	North Greenfield, Wis	50	May 16, 1896
		Superintendent northwest station	Milwaukee, Wis	50	Do.
		Superintendent third station	do	50	Do.
		James Smith	Hales Corners, Wis	50	Do.
		Wm. J. Cutteridge, postmaster	Lake Geneva, Wis	75	Do.
		Jackson Selbaugh, postmaster	Viroqua, Wis	75	Do.
		Frank R. Morris, postmaster	Milton, Wis	75	Do.
		J. W. Wightman	Elroy, Wis	75	Do.
		F. C. Bennett	Monroe, Wis	75	Do.
		Henry Schmidt	New Glarus, Wis	25	Do.
		G. J. Hayes, postmaster	Lyndon Station, Wis	25	Do.
		John Singleton	Camp Douglas, Wis	25	Do.
		Alex. Horn, postmaster	Cedarbury, Wis	25	Do.
		H. E. Seaber, postmaster	Darien, Wis	25	Do.
		Wm. Kingston	Honey Creek, Wis	25	Do.
		Wm. Sanders	Waterford, Wis	25	Do.
		Edward Morehouse	Springfield, Wis	25	Do.
		R. Habernicht, postmaster	East Troy, Wis	25	Do.
		Ira B. Pierce	Monticello, Wis	25	Do.
		F. T. Henry, postmaster	Sharon, Wis	25	Do.
		F. B. Lumb, postmaster	Troy Center, Wis	25	Do.
		Chas. H. Thompson, postmaster	Union Grove, Wis	25	Do.
		James Scott	Shopiere, Wis	25	Do.
		L. W. Merrick, postmaster	Spring Prairie, Wis	25	Do.
		Thos. Adland	Northcape, Wis	25	Do.
		Jos. A. Strassen	Lyons, Wis	25	Do.
		Frank Broughton	Albany, Wis	25	Do.
		Michael Doyle	Gratiot, Wis	25	Do.
		J. P. Cunningham	Dayton, Wis	25	Do.
		W. F. Bristol, postmaster	West Union, Wis	25	Do.
		Oli Gilbert	Oxfordville, Wis	25	Do.
		Postmaster	Fayette, Wis	25	Do.
		do	South Milwaukee, Wis	25	Do.
		Henry Blumm	Silver Lake, Wis	25	Do.
		Hon. A. O. Wilson, postmaster	Janesville, Wis	100	Do.
		G. H. Ely, postmaster	Mouston, Wis	100	Do.
		T. E. Ryan, postmaster	Waukesha, Wis	100	Do.
		John H. Freyer, postmaster	Whitewater, Wis	100	Do.
		Andrew Simonson	Racine, Wis	100	Do.
		A. J. Burg, postmaster	Kenosha, Wis	100	Do.
		A. C. Beckwith	Elkhorn, Wis	100	Do.
		Hon. Jno. L. Mitchell	Room 24, Maltby Building, Washington, D. C	38	Do.
Morgan, J. T	Alabama	Miscellaneous individuals	Miscellaneous addresses in Alabama	448	May 15, 1896
		do	do	872	May 28, 1896
Morrill, J. S	Vermont	do	Miscellaneous addresses in Vermont	3,000	May 18, 1896
		do	do	143	May 20, 1896
		Hon. Justin S. Morrill	Committee on Finance, United States Senate, Washington, D. C.	1,000	May 23, 1896
Murphy, jr., E	New York	Hon. Wm. M. Keenan	Care Akin & Keenan, Troy, N. Y	2,900	May 18, 1896
		Hon. Hugh J. Grant	Oradell, N. Y	50	Do.
		Miscellaneous individuals	Miscellaneous addresses in New York	26	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Murphy, jr., E	New York	Hon. Edw. Murphy, jr	1701 K street, Washington, D. C	24	May 18, 1896
		do	Care Hon. Wm. M. Keenan, Troy, N. Y	1,000	May 21, 1896
McCall, John E	Tennessee	Hon. John E. McCall	1323 M street northwest, Washington, D. C	3,000	Apr. 23, 1896
		do	do	1,000	May 23, 1896
McCulloch, P. D	Arkansas	Miscellaneous individuals	Miscellaneous addresses in Arkansas	3,000	May 7, 1896
		do	do	528	May 20, 1896
		do	do	1,000	May 25, 1896
McDearmon, James C	Tennessee	do	Miscellaneous addresses in Tennessee	3,000	May 8, 1896
		do	do	608	May 20, 1896
		do	Miscellaneous addresses in Kentucky and Tennessee.	303	Do.
		do	Miscellaneous addresses in Tennessee	1,000	May 25, 1896
		do	do	395	May 28, 1896
McEwan, T	New Jersey	do	Miscellaneous addresses in New Jersey	2,943	May 12, 1896
		Hon. Thomas McEwan, jr	493 Central avenue, Jersey City, N. J	50	Do.
		do	1326 I street northwest, Washington, D. C	1,000	May 22, 1896
McKenney, Wm. R	Virginia	Hon. Wm. R. McKenney	Varnum Hotel, Washington, D. C	3,000	May 1, 1896
McLachlan, J	California	S. W. Steadman, esq	King City, Cal	50	May 20, 1896
		J. F. Beckett	Arroyo Grande, Cal	50	Do.
		N. Blackstock	Ventura, Cal	50	Do.
		Chas. N. Reed	San Luis Obispo, Cal	50	Do.
		J. W Taggart	Santa Barbara, Cal	50	Do.
		J. H. Glass	Paso Robles, Cal	50	Do.
		Walter Elliott	Santa Maria, Cal	50	Do.
		Alex. McLean	Lompoc, Cal	50	Do.
		E. C. Demo	Long Beach, Cal	25	Do.
		A. E. Slosson	Monrovia, Cal	25	Do.
		A. T. Currier	Spadra, Cal	25	Do.
		T. C. Baldwin	Azusa, Cal	25	Do.
		T. T. Tidball	Jolon, Cal	25	Do.
		T. W. Ward	Carpenteria, Cal	25	Do.
		L. Harris	Las Alamas, Cal	25	Do.
		H. L. Williams	Summerland, Cal	25	Do.
		A. W. Boyd	Las Olivas, Cal	25	Do.
		John J. Brooks	Nordhoff, Cal	25	Do.
		James Walker	Fillmore, Cal	25	Do.
		A. J. Arnold	West Saticoy, Cal	25	Do.
		Carl E. Linsey	Santa Cruz, Cal	50	Do.
		Duncan McPherson	do	50	Do.
		J. B. Titus	Santa Paula, Cal	50	Do.
		E. O. Gerberding	Huenema, Cal	50	Do.
		R. R. Tanner	Santa Monica, Cal	50	Do.
		Warren R. Porter	Lomaprieta, Cal	50	Do.
		W. J. Hill, editor	Salinas, Cal	50	Do.

		W. R. Radcliff	Watsonville, Cal	50	Do.
		Harry Hunter	Castroville, Cal	50	Do.
		T. J. Field	Monterey, Cal	50	Do.
		C. P. Nance	San Lucas, Cal	50	Do.
		B. H. Franklin	Cambria, Cal	25	Do.
		A. M. Hardie	Cayucos, Cal	25	Do.
		R. W. Grutnhagen	Creston, Cal	25	Do.
		Wm. Sarles	Gonzales, Cal	25	Do.
		A. W. Kinney	Los Angeles, Cal	400	Do.
		Jos. Clark	Pasadena, Cal	200	Do.
		Hon. Jas. McLachlan	627 F street northwest, Washington, D. C	425	Do.
		S. W. Steadman	King City, Cal	50	Do.
		C. F. Edson	Manzana, Cal	25	Do.
		Walter S. Melick	Lancaster, Cal	25	Do.
		R. E. Mickle	Afton, Cal	25	Do.
		H. C. Hubbard	San Fernando, Cal	25	Do.
		John J. Arnot	Newhall, Cal	25	Do.
		G. W. Snyder	Glendale, Cal	25	Do.
		H. G. Tinsley	Pomona, Cal	25	Do.
		R. F. House	do	25	Do.
		B. J. Davis	Lordsburg, Cal	25	Do.
		E. A. Miller	University, Cal	25	Do.
		W. F. Miller	Sierra Madre, Cal	25	Do.
		A. F. Crank	Lamanda, Cal	25	Do.
		S. W. Burke	Rivera, Cal	25	Do.
		H. O. Dougherty	Norwalk, Cal	25	Do
		J. C. Rives	Downey, Cal	25	Do
		W. H. Carpenter	Compton, Cal	25	Do
		Azra Porter	Huasana, Cal	25	Do
		Wm. M. Hiatt, attorney at law	Whittier, Cal	25	Do
		Geo. H. Peck	Elmonte, Cal	25	Do.
		A. G. Page	Alhambra, Cal	25	Do.
		J. J. Bodkin	San Gabriel, Cal	25	Do.
		E. W. Wardall	Monrovia, Cal	25	Do.
		J. B. Bonetti	Guadaloupe, Cal	25	Do.
		Henry Robinson	Santa Ynez, Cal	25	Do.
		S. A. Dana	Nipoma, Cal	25	Do.
McLaurin, J. L	South Carolina	Hon. J. L. McLaurin	Bennettsville, S. C	3,000	Apr. 23, 1896
		do	do	1,000	May 22, 1896
McMillan, B	Tennessee	Miscellaneous individuals	Miscellaneous addresses in Tennessee	2,931	Apr. 29, 1896
		Hon. B. McMillan	House of Representatives, Washington, D. C	69	Do.
		do	931 G street northwest, Washington, D. C	1,000	May 25, 1896
McRae, T. C	Arkansas	Hon. T. C. McRae	Metropolitan Hotel, Washington, D. C	528	Apr. 24, 1896
		Miscellaneous individuals	Miscellaneous addresses in Arkansas	2,472	Do.
		do	do	1,000	May 21, 1896
		do	do	399	May 28, 1896
Maddox, J. W	Georgia	do	Miscellaneous addresses in Georgia	3,000	Apr. 29, 1896
Maguire J. G	California	Thomas Beck	Watsonville, Cal	50	May 19, 1896
		J. F. Thompson	Eureka, Cal	50	Do.
		John A. Hicks	Los Gatos, Cal	50	Do.
		Charles F. Peckham	Watsonville, Cal	50	Do.
		Duucan McPherson	Santa Cruz, Cal	50	Do.
		A. A. Taylor	do	50	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Maguire, J. G	California	Wells Drury, editor Morning Call	San Francisco, Cal	50	May 19, 1896
		Reuben Shearer	811 Lane street, Seattle, Wash	50	Do.
		Editor The Rustlet	Watsonville, Cal	50	Do.
		W. W. Joyce	Salina City, Cal	50	Do.
		Calvin Barket	Lompoc, Cal	50	Do.
		Dr. G. B. Nichols	San Luis Obispo, Cal	50	Do.
		James F. Reynolds	Registrar's office, San Francisco, Cal	50	Do.
		James S. Menasco	Watsonville, Cal	50	Do.
		Chas. M. Cassin	Santa Cruz, Cal	50	Do.
		J. A. Cooper	Ukiah, Cal	50	Do.
		Cam. Whitthorne	Vallejo, Cal	50	Do.
		James H. Barry	429 Montgomery street, San Francisco, Cal	50	Do.
		Joseph Leggett	Mills Building, San Francisco, Cal	50	Do.
		A. D. Cridge	Lemoore, Cal	50	Do.
		Carl E. Lindsay	Santa Cruz, Cal	50	Do.
		Ben Maddox	Visalia, Cal	50	Do.
		Geo. W. Peckham	San Jose, Cal	50	Do.
		Geo. W. Maguire	Merced, Cal	50	Do.
		Mrs. Enoch Mylar	Mulberry, San Benito, Cal	50	Do.
		Thomas Conner	San Juan, Cal	50	Do.
		Hon. Marion Cannon	San Buena Ventura, Cal	50	Do.
		James E. Mills	Quincy, Cal	50	Do.
		S. E. Riggen	Portland, Oreg	50	Do.
		A. J. Murphy	528 Twentieth street, Oakland, Cal	50	Do.
		Ed. McGittigan	Vallejo, Cal	50	Do.
		Mrs. Mary A. Van Schaick	Gilroy, Cal	50	Do.
		Editor The Expositor	Fresno, Cal	50	Do.
		Mrs. Fred. Bond	Maple Valley, Wash	50	Do.
		Walter Gallager	Supreme court building, San Francisco, Cal	50	Do.
		J. J. Shinabarger	Monterey, Cal	50	Do.
		Miss Ida McAdam	Watsonville, Cal	50	Do.
		Judge James F. Breen	Hollister, Cal	50	Do.
		W. A. Thompson	Santa Rosa, Cal	50	Do.
		Hon. A. Caminetti	Quincy, Cal	50	Do.
		Raleigh Barcar	Vallejo, Cal	50	Do.
		Hon. Warren B. English	Oakland, Cal	50	Do.
		Mr. James English	House of Representatives, Washington, D. C	125	Do.
		Hon. J. G. Maguire	1017 Fifteenth street northwest, Washington, D. C.	100	Do.
		do	Care of Jas. English, House of Representatives, Washington, D. C.	1,000	May 27, 1896
Mahany, R. B	New York	Hon. R. B. Mahany	The Albany, Seventeenth and H streets northwest, Washington, D. C.	3,000	May 13, 1896
		do	do	1,000	May 22, 1896
Mahon, T. M	Pennsylvania	C. A. Suesserott	Chambersburg, Pa	1,150	May 11, 1896

		Hon. P. M. Lytle	Huntingdon, Pa	300	Do.
		Hon. Chas. W. Herrman	Middleburg, Pa	250	Do.
		Hon. Benj. K. Focht	Lewisburg, Pa	250	Do.
		Hon. William Hertzler	Port Royal, Pa	250	Do.
		Hon. Joseph Woods	Lewiston, Pa	200	Do.
		Hon. T. M. Mahon	1336 I street northwest, Washington, D. C	600	Do.
		do	Care of C. A. Suesserott, Chambersburg, Pa	1,000	May 21, 1896
Marsh, B. F	Illinois	Hon. B. F. Marsh	House of Representatives, Washington, D. C	3,000	Apr. 29, 1896
		do	do	1,000	May 23, 1896
Meiklejohn, G. D	Nebraska	Miscellaneous individuals	Miscellaneous addresses in Nebraska	1,645	May 14, 1896
		Hon. G. D. Meiklejohn	Care of J. W. McClelland, Fullerton, Nebr	855	Do.
		Hon. L. W. Morgan	Fullerton, Nebr	500	Do.
Mercer, D. H	do	Miscellaneous individuals	Miscellaneous addresses in Nebraska	300	May 9, 1896
		J. H. Cameron	Herman, Nebr	50	Do.
		W. S. Roker	Gretna, Nebr	400	Do.
		Edgar Howard, Times	Papillion, Nebr	300	Do.
		The Monitor	Springfield, Nebr	200	Do.
		The Enterprise	Valley, Nebr	150	Do.
		The Pilot	Blair, Nebr	150	Do.
		The Leader	do	150	Do.
		The Republican	do	150	Do.
		The News	Arlington, Nebr	150	Do.
		The Times	do	150	Do.
		The Courier	Blair, Nebr	150	Do.
		Associated charities	807 Howard street, Omaha, Nebr	100	Do.
		Phœnix	Bellevue, Nebr	100	Do.
		The News	Waterloo, Nebr	100	Do.
		The Courier	Milton, Nebr	100	Do.
		The Heroes	Bennington, Nebr	100	Do.
		The Exchange	Elkhorn, Nebr	100	Do.
		Pacific Express Company	Omaha, Nebr	100	Do.
		Miscellaneous individuals	Miscellaneous addresses in Nebraska	209	Do.
		Hon. D. H. Mercer	House of Representatives, Washington, D. C	21	Do.
		do	Willard's Hotel, Washington, D. C	25	May 28, 1896
		County poor farm	Omaha, Nebr	75	Do.
		Associated charities	807 Howard street, South Omaha, Nebr	300	Do.
		Geo. Ambler	Omaha, Nebr	50	Do.
		H. D. Thrope	Richfield, Nebr	50	Do.
		Samuel Spiker	Spiker, Nebr	50	Do.
		Daily Tribune	South Omaha, Nebr	150	Do.
		Daily Stockman	do	150	Do.
		Drover's Journal	do	150	Do.
Meredith, E. E	Virginia	Hon. E. E. Meredith	Manassas, Va	3,000	May 9, 1896
		do	do	1,000	May 21, 1896
Miles, J. W	Maryland	Miscellaneous individuals	Miscellaneous addresses in Maryland	2,900	May 12, 1896
		James Laws	Pittsville, Md	100	Do
		Hon. J. W. Miles	250 Delaware avenue, Washington, D. C	1,000	May 22, 1896
Miller, O. L	Kansas	Hon. O. L. Miller	House of Representatives, Washington, D. C	170	May 6, 1896
		Miscellaneous individuals	Miscellaneous addresses in Kansas	2,830	Do.
		Hon. O. L. Miller	House of Representatives, Washington, D. C	100	May 28, 1896
Miller, Warren	West Virginia	Hon. Warren Miller	Varnum Hotel, Washington, D. C	1,519	May 7, 1896
		Miscellaneous individuals	Miscellaneous addresses in West Virginia	1,451	Do.
		Hon. Warren Miller	Hotel Varnum, Washington, D. C	1,000	May 22, 1896

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Milliken, S. L.	Maine	Miscellaneous individuals	Miscellaneous addresses in Maine	2,850	May 18, 1896
		Hon. S. L. Milliken	House of Representatives, Washington, D. C.	150	Do.
		do	do	1,000	May 28, 1896
Milnes, A	Michigan	Miscellaneous individuals	Miscellaneous addresses in Michigan	2,900	May 16, 1896
		Hon. A. Milnes	17 C street northeast, Washington, D. C.	100	Do.
		Oscar A. Hancock	Hillsdale, Mich	200	May 22, 1896
		Frank Latta	Battle Creek, Mich	200	Do.
		M. J. Cunningham	Vermontville, Mich	200	Do.
		W. H. Milnes	Coldwater, Mich	400	Do.
Miner, H. C.	New York	Hon. H. C. Miner	228 New Jersey avenue southeast, Washington, D. C.	3,000	May 13, 1896
		do	Fifth Avenue Theater, New York City, N. Y	1,000	May 23, 1896
Minor, E. S.	Wisconsin	Hon. E. S. Minor	49 D street southeast, Washington, D. C.	3,000	May 13, 1896
		do	do	1,000	May 21, 1896
Mondell, F. W.	Wyoming	Hon. F. W. Mondell	Willard's Hotel, Washington, D. C.	3,000	May 13, 1896
		do	Care Hon. J. D. Hicks, Willard's Hotel, Washington, D. C.	249	May 25, 1896
		Miscellaneous individuals	Miscellaneous addresses in Wyoming	751	Do.
Money, H. D.	Mississippi	do	Miscellaneous addresses in Mississippi	1,230	Apr. 30, 1896
		Matt Mahamer	Macon, Miss	149	Do.
		Chairman Democratic Executive Committee	Pittsboro, Miss	148	Do.
		do	Houston, Miss	148	Do.
		do	Grenada, Miss	148	Do.
		do	Walthall, Miss	148	Do.
		do	Chester, Choctaw County, Miss	147	Do.
		Henry Crosly, postmaster	Water Valley, Miss	140	Do.
		Chairman Democratic Executive Committee	Pontotoc, Miss	148	Do.
		do	DeKalb, Miss	148	Do.
		Walter Heirt, postmaster	Winona, Miss	148	Do.
		M. A. Metts	Louisville, Miss	148	Do.
		T. C. Excuse, postmaster	West Point, Miss	150	Do.
		Hon. Matt Mahorner	Macon, Miss	94	May 27, 1896
		Hon. Henry Crosby	Water Valley, Miss	84	Do.
		Miscellaneous individuals	Miscellaneous addresses in Mississippi	22	Do.
		Chairman Democratic executive committee	Houston, Miss	80	Do.
		do	Pontotoc, Miss	80	Do.
		Hon. W. A. Hurt, postmaster	Winona, Miss	80	Do.
		Chairman Democratic executive committee	Pittsboro, Miss	80	Do.
		do	Walthall, Miss	80	Do.
		do	Chester, Miss	80	Do.
		do	Dekalb, Miss	80	Do.
		do	Grenada, Miss	80	Do.
		Hon. M. A. Metts, postmaster	Louisville, Miss	80	Do.
		Hon. T. C. Excuse	West Point, Miss	80	Do.

Moody, W. H.	Massachusetts	Hon. W. H. Moody	House of Representatives, Washington, D. C	2,234	May 18, 1896
		Miscellaneous individuals	Miscellaneous addresses in Massachusetts	766	Do.
Morse, E. A.	do	do	do	3,000	Do.
		Hon. E. A. Morse	Canton, Mass	1,000	May 21, 1896
Moses, C. L.	Georgia	Miscellaneous individuals	Miscellaneous addresses in Georgia	3,000	Apr. 29, 1896
		Hon. C. L. Moses	Care P. T. McCutcheon, Franklin, Ga	1,000	May 27, 1896
Mozley, N. A	Missouri	Hon. N. A. Mozley	215 East Capitol street, Washington, D. C	490	May 7, 1896
		Miscellaneous individuals	Miscellaneous addresses in Missouri	2,510	Do.
		Hon. N. A. Mozley	215 East Capitol street, Washington, D. C	1,000	May 27, 1896
Murphy, E. J.	Illinois	Hon. E. J. Murphy	1213 Rhode Island avenue, Washington, D. C	3,000	Apr. 30, 1896
Murphy, N. O	Arizona	Hon. N. O. Murphy	House of Representatives, Washington, D. C	209	May 8, 1896
		Miscellaneous individuals	Miscellaneous addresses in Arizona	41	Do.
		Sam'l Bruckenheimer	Room 22, Washington Loan and Trust Co. Building, Washington, D. C.	100	Do.
		Hon. W. L. Kimball	Mesa City, Ariz	100	Do.
		Col. M. J. Egan	Clifton, Ariz	50	Do.
		Hon. Jno. Blake	Safford, Ariz	50	Do.
		Postmaster	Buckeye, Ariz	50	Do.
		Hon. F. M. Zuck	Holbrook, Ariz	50	Do.
		Hon. Fred. Nellis	Williams, Ariz	50	Do.
		O. D. M. Gaddis	Kingman, Ariz	50	Do.
		Hon. C. M. Funston	Flagstaff, Ariz	50	Do.
		Hon. Bruce Perley	Phœnix, Ariz	500	Do.
		Hon. Jesse N. Smith	Snowflake, Ariz	500	Do.
		Hon. T. W. Otis	Prescott, Ariz	200	Do.
		Hon. Perry Wildman	Tempe, Ariz	200	Do.
		Hon. W. L. Head	Campverde, Ariz	200	Do.
		Hon. Sam'l Hughes	Tucson, Ariz	200	Do.
		Hon. M. R. Moore	Arizola, Ariz	200	Do.
		Hon. F. S. Ingalls	Yuma, Ariz	200	Do.
		F. B. Logan	do	300	May 27, 1896
		Hon. N. O. Murphy	Room 22, Washington Loan and Trust Co. Building, Washington, D. C.	700	Do.
Nelson, Knute	Minnesota	Hon. Knute Nelson	Room 13, Terrace, United States Senate, Washington, D. C.	262	May 15, 1896
		Miscellaneous individuals	Miscellaneous addresses in Minnesota	2,738	Do.
		do	do	1,000	May 20, 1896
Neill, Robt	Arkansas	do	Miscellaneous addresses in Arkansas	2,037	Apr. 30, 1896
		Hon. Robt. Neill	*210 A street northeast, Washington, D. C*	963	Do.
		do	do	1,000	May 23, 1896
Newlands, F. G	Nevada	Miscellaneous individuals	Miscellaneous addresses in Nevada	2,733	May 20, 1896
		Hon. F. G. Newlands	1324 F street northwest, Washington, D. C	267	Do.
		do	713 K street northwest, Washington, D. C	1,000	May 25, 1896
Noonan, G. H	Texas	Hon. G. H. Noonan	1344 Vermont avenue, Washington, D. C	3,000	Apr. 23, 1896
		do	do	1,000	May 21, 1896
Northway, S. A	Ohio	S. A. Northway	The Bancroft, Washington, D. C	225	Do.
		Miscellaneous individuals	Miscellaneous addresses in Ohio	2,775	Do.
		G. A. R. post	Conneaut, Ohio	100	May 27, 1896
		do	Akron, Ohio	100	Do.
		do	Burton, Ohio	100	Do.
		do	Rootstown, Ohio	100	Do.
		do	Cortland, Ohio	100	Do.
		do	Ashtabula, Ohio	100	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Northway, S. A	Ohio	G. A. R. post	Chardon, Ohio	100	May 27, 1896
		do	Niles, Ohio	100	Do.
		do	Ravenna, Ohio	100	Do.
		Math A. Miller	Akron, Ohio	100	Do.
Odell, jr., B. B	New York	Mr. Peter B. McGregor	Hilburn, N. Y	50	May 18, 1896
		Miscellaneous individuals	Miscellaneous addresses in New York	1,600	Do.
		Hon. B. B. Odell, jr	Newburg, N. Y	1,350	Do.
		do	do	1,000	May 22, 1896
Ogden, H. W	Louisiana	Hon. H. W. Ogden, Committee on the Post-Office and Post-Roads.	House of Representatives, Washington, D. C	430	Apr. 27, 1896
		Miscellaneous individuals	Miscellaneous addresses in Louisiana	2,570	Do.
		do	do	1,000	May 25, 1896
		do	do	825	May 28, 1896
Otey, Peter J	Virginia	Hon. P. J. Otey	Oxford Hotel, Washington, D. C	3,000	May 1, 1896
		do	do	100	May 20, 1896
		Miscellaneous individuals	Miscellaneous addresses in Virginia	14	Do.
		Hon. Peter J. Otey	Oxford Hotel, Washington, D. C	1,000	May 22, 1896
Otjen, Theo	Wisconsin	Hon. Theo. Otjen	229 N. Jersey avenue southeast, Washington, D. C	2,350	May 15, 1896
		Miscellaneous individuals	Miscellaneous addresses in Wisconsin	650	Do.
		do	do	924	May 27, 1896
		Hon. Theo. Otjen	Post-Office House of Representatives, Washington, D. C.	76	Do.
Overstreet, Jesse	Indiana	Miscellaneous individuals	Miscellaneous addresses in Indiana	2,306	May 6, 1896
		Hon. Jesse Overstreet	Ebbitt House, Washington, D. C	694	Do.
Owens, W. C	Kentucky	Richard Gray	Versailles, Ky	300	May 7, 1896
		Isaac Risley	Lagrange, Ky	300	Do.
		Jos. Douthhill	Newcastle, Ky	550	Do.
		J. Walker Pearl	Lexington, Ky	500	Do.
		Chas. G. Payne	Frankfort, Ky	550	Do.
		Miscellaneous individuals	Miscellaneous addresses in Kentucky	800	Do.
		Hon. W. C. Owens	Room 11, Senate Terrace, Washington, D. C	300	May 20, 1896
		do	do	1,000	May 25, 1896
Palmer, J. M	Illinois	Miscellaneously addressed	Illinois	1,000	Do.
		do	do	2,604	May 5, 1896
		Hon. J. M. Palmer	Hotel Elsmere, Washington, D. C	396	Do.
Pasco, S	Florida	Hon. S. Pasco	Maltby Building, Washington, D. C	2,373	Apr. 23, 1896
		Miscellaneously addressed	Florida	627	Do.
		do	do	951	May 28, 1896
Peffer, W. A	Kansas	do	Kansas	1,338	May 6, 1896
		Hon. W. A. Peffer	Post-office, United States Senate, Washington, D. C.	1,000	May 22, 1896
		Miscellaneously addressed	Kansas	994	May 28, 1896
Perkins, G. C	California	do	California	1,074	May 20, 1896
		John Tuohy	Tulare, Cal	100	Do.
		J. C. Holloway	Cloverdale, Cal	100	Do.

		Hon. L. A. Richards	Grayson, Cal	100	Do.
		Jos. E. Terry	Sacramento, Cal	100	Do.
		Rev. J. W. Webb	Box 689, Fresno, Cal	100	Do.
		Hon. Alfred P. Keen	National City, Cal	100	Do.
		Hon. B. A. Osborne	Watsonville, Cal	100	Do.
		Hon. J. B. Hoyt	Suisun, Cal	100	Do.
		Hon. Rich. Gird	Chino, Cal	90	Do.
		Hon. E. C. Voorhis	Suttercreek, Cal	100	Do.
		L. U. Shippee	Stockton, Cal	100	Do.
		Hon. J. L. Beard	Warmsprings, Cal	100	Do.
		Messrs. Perkins & Wise	Orville, Cal	100	Do.
		Hon. Thos. Flint	San Juan, Cal	100	Do.
		Hon. Owen Wade	St. Helena, Cal	100	Do.
		Hon. S. C. Smith	Bakersfield, Cal	100	Do.
		Hon. S. N. Androus	Pomona, Cal	100	Do.
		Hon. F. C. Frank	Santa Clara, Cal	100	Do.
		Hon. J. M. Gleaves	Redding, Cal	100	Do.
		Hon. G. C. Perkins	Maltby Building, Washington, D. C	36	Do.
		L. Fieganbaum	Rohnerville, Cal	100	May 27, 1896
		W. W. Chapman	Petaluma, Cal	100	Do.
		Hon. R. Linder	Tulare, Cal	100	Do.
		Hon. S. C. Smith	Bakersfield, Cal	100	Do.
		Miscellaneously addressed	California	348	Do.
		Hon. Thos. Flint	San Juan, Cal	102	Do.
		Hon. Geo. C. Perkins	Maltby Building, Washington, D. C	150	Do.
Pettigrew, R. F	South Dakota	Miscellaneously addressed	South Dakota	2,355	May 16, 1896
		Hon. R. F. Pettigrew	United States Senate, Washington, D. C	645	Do.
		do	do	1,000	May 28, 1896
Platt, O. H	Connecticut	Miscellaneously addressed	Connecticut	2,000	May 19, 1896
		C. C. Palmer	Jewett City, Conn	16	Do.
		Edwin L. Wood	Putnam, Conn	16	Do.
		Hon. O. H. Platt	United States Senate, Washington, D. C	968	Do.
		do	do	1,000	May 22, 1896
Pritchard, J. C	North Carolina	Miscellaneously addressed	North Carolina	2,497	May 8, 1896
		do	do	279	May 28, 1896
Pugh, J. L	Alabama	Hon. J. L. Pugh	Committee on Revolutionary Claims, United States Senate, Washington, D. C.	3,000	Apr. 29, 1896
		do	do	1,000	May 22, 1896
Parker, R. Wayne	New Jersey	Hon. R. Wayne Parker	House of Representatives, Washington, D. C	3,000	Apr. 29, 1896
		do	do	1,000	May 22, 1896
Pendleton, G. C	Texas	Miscellaneously addressed	Texas	3,000	Apr. 23, 1896
Proctor, R	Vermont	F. C. Little, master W. Grange	Barre, Vt	50	May 19, 1896
		S. A. Flint, master Middlesex Grange	Montpelier, Vt	50	Do.
		E. H. Stickney, master N. B. Grange	Worcester, Vt	50	Do.
		P. D. Bullard, master S. V. Grange	East Cambridge, Vt	50	Do.
		M. E. Bailey, master Eagle Grange	Berlin, Vt	50	Do.
		F. H. Packard, master S. Grange	Braintree, Vt	50	Do.
		G. W. Cady, master O. Grange	South Woodstock, Vt	50	Do.
		Geo. T. Buchanan, P. V. Grange	Rockingham, Vt	50	Do.
		H. A. Parke, master E. Grange	Lyndon Center, Vt	50	Do.
		Janet Edson, master S. B. Grange	Chester, Vt	50	Do.
		A. C. Greely, master W. R. Grange	Chester Depot, Vt	50	Do.
		T. G. Bronson, Caledonia Grange	East Hardwick, Vt	50	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Proctor, R	Vermont	Jno. Darling, I. Grange	Sheffield, Vt	50	May 19, 1896
		H. A. Scott, W. R. Grange	Townshend, Vt	50	Do.
		A. F. Lawrence, G. M. Grange	St. Johnsbury, Vt	50	Do.
		J. W. Smith, I. Grange	Chester, Vt	50	Do.
		H. F. Hill, W. Grange	Waterbury Center, Vt	50	Do.
		S. D. May, Vermont Grange	Wardsboro, Vt	50	Do.
		Eugene H. Neyes, F. Grange	Sharon, Vt	50	Do.
		Ira D. Gates, E. S. Grange	Dummerston, Vt	50	Do.
		W. H. Dean, N. Grange	Brandon, Vt	50	Do.
		G. T. Misley, Vernon Grange	Vernon, Vt	50	Do.
		J. C. Messer, H. H. Grange	Rochester, Vt	50	Do.
		J. B. Foster, J. Grange	Johnson, Vt	50	Do.
		G. W. Pierce, P. Grange	Brattleboro, Vt	50	Do.
		Cassus Peck, B. Grange	Brookfield, Vt	50	Do.
		C. H. Jackson, E. A. Grange	Milton, Vt	50	Do.
		Miscellaneously addressed	Vermont	199	Do.
		Hon. R. Proctor	United States Senate, Washington, D. C	201	Do.
		L. R. Taylor, master W. Grange	Westford, Vt	50	Do.
		E. H. Hallett, master W. A. Grange	St. Johnsbury Center, Vt	50	Do.
		Jas. H. Buck, master W. R. Grange	South Royalton, Vt	50	Do.
		M. B. Roberts, Mount Anthony Grange	Rupert, Vt	50	Do.
		J. H. Sheldon, D. Grange	Dorset, Vt	50	Do.
		C. B. Smith, L. Grange	North Tunbridge, Vt	50	Do.
		J. H. Clarke, M. G. Grange	West Westminster, Vt	50	Do.
		S. M. Cragin, S. Grange	Springfield, Vt	50	Do.
		Wm. Colburn, Grafton Grange	Grafton, Vt	50	Do.
		H. Gleason, W. B. Grange	Landgrove, Vt	50	Do.
		J. D. Eagleston, B. M. Grange	East Burke, Vt	50	Do.
		D. E. Smith, V. Grange	Pawlet, Vt	50	Do.
		T. E. Ward, B. B. Grange	Guilford Center, Vt	50	Do.
		F. W. Ayers, Essex Center Grange	Essex, Vt	50	Do.
		C. A. Peck, B. Grange	Westminster, Vt	50	Do.
		C. C. Whitney, M. B. Grange	East Bethel, Vt	50	Do.
		W. E. Colby, D. R. V. Grange	West Berlin, Vt	50	Do.
		O. S. Abbott, F. Grange	South Londonderry, Vt	50	Do.
		E. G. Sherwin, Samorville Grange	Morrisville, Vt	50	Do.
		Jno. Field, C. Grange	Williston, Vt	50	Do.
		Mrs. W. C. Niles, S. S. Grange	West Halifax, Vt	50	Do.
		C. C. Chandler, V. Grange	Wilmington, Vt	50	Do.
		T. H. Putnam, N. R. Grange	Jacksonville, Vt	50	Do.
		J. C. Whitaker, M. M. Grange	Underhill, Vt	50	Do.
		D. H. Morse, W. R. Grange	West Randolph, Vt	50	Do.
		Miscellaneously addressed	Vermont	63	May 23, 1896
		C. A. Dana	New Haven, Vt	50	Do.

		Miscellaneously addressed	Vermont	40	May 28, 1896
		do	do	609	Do.
Patterson, J	Tennessee	do	Tennessee	3,000	Apr. 27, 1896
		do	do	177	May 20, 1896
Payne, S. E	New York	do	New York	2,818	May 18, 1896
		Hon. S. E. Payne	House of Representatives, Washington, D. C	182	Do.
		Miscellaneously addressed	New York	50	May 27, 1896
Pearson, R	North Carolina	do	North Carolina	2,856	Apr. 23, 1896
		Hon. R. Pearson	The Shoreham, Washington, D. C	144	Do.
		Miscellaneously addressed	North Carolina	115	May 20, 1896
		Hon. R. Pearson	111 Second street northwest, Washington, D. C	1,000	May 21, 1896
Perkins, G. D	Iowa	L. P. Vance	Sutherland, Iowa	200	May 4, 1896
		E. H. McCutcheon	Holstein, Iowa	200	Do.
		Phil Boland	Le Mars, Iowa	200	Do.
		P. E. Nary	Spirit Lake, Iowa	200	Do.
		A. Romer	Sibley, Iowa	200	Do.
		P. S. Junkin	Orange City, Iowa	200	Do.
		W. J. Dixon	Sac City, Iowa	200	Do.
		L. H. Henry	Storm Lake, Iowa	200	Do.
		A. R. Molyneux	Cherokee, Iowa	200	Do.
		E. W. Holbrook	Onawa, Iowa	200	Do.
		E. C. Roach	Rock Rapids, Iowa	200	Do.
		M. H. Richards	Spencer, Iowa	200	Do.
		Hon. G. D. Perkins	House of Representatives, Washington, D. C	600	Do.
		Miscellaneously addressed	Iowa	1,000	May 27, 1896
Phillips, T. W	Pennsylvania	do	Pennsylvania	2,245	May 12, 1896
		M. Weyand	Beaver, Pa	200	Do.
		Hon. J. B. Brown	New Castle, Pa	200	Do.
		Victor K. Phillips	Butler, Pa	200	Do.
		D. C. M. Evans	Mercer, Pa	125	Do.
		T. N. Phillips	New Castle, Pa	30	Do.
		Hon. W. A. McMaster	Jamestown, Pa	50	May 27, 1896
		Hon. J. B. Brown	New Castle, Pa	150	Do.
		D. C. M. Evans	Mercer, Pa	100	Do.
		H. R. Thorpe	Greenville, Pa	100	Do.
		Thos. Vaughn	do	100	Do.
		M. Weyand	Beaver, Pa	250	Do.
		V. K. Phillips	Butler, Pa	229	Do.
		Miscellaneously addressed	Pennsylvania	21	Do.
Pugh, Samuel J	Kentucky	Hon. Samuel J. Pugh	1336 Vermont avenue, Washington, D. C	3,000	Apr. 30, 1896
		do	do	1,000	May 23, 1896
Powers, H. H	Vermont	A. B. Veazey	1731 P street northwest, Washington, D. C	2,000	May 19, 1896
		Hon. H. H. Powers	House of Representatives, Washington, D. C	47	Do.
		Miscellaneously addressed	Vermont	953	Do.
		Hon. H. H. Powers	1731 P street northwest, Washington, D. C	1,000	May 22, 1896
Price, A	Louisiana	Hon. A. Price	The Cairo, Washington, D. C	2,270	Apr. 22, 1896
		Miscellaneously addressed	Louisiana	730	Do.
		Hon. A. Price	The Cairo, Washington, D. C	1,000	May 25, 1896
Prince, Geo. W	Illinois	Hon. Geo. W. Prince	699 Maryland avenue northeast, Washington, D. C	3,000	May 5, 1896
		do	do	1,000	May 23, 1896
Pitney, M	New Jersey	Hon. M. Pitney	1221 H street northeast, Washington, D. C	802	May 5, 1896
		Miscellaneously addressed	New Jersey	2,198	Do.
		Geo. W. Yates	Norristown, N. J	50	May 28, 1896

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Pitney, M	New Jersey	Whitman & Steele	Newton, N. J	50	May 28, 1896
		E. E. Hawk	Huntsville, N. J	50	Do.
		J. J. Storms	McAfee, N. J	50	Do.
		W. G. Simpson	Highbridge, N. J	50	Do.
		Windsor Lime Co	Hamburg, N. J	50	Do.
		Jno. Sarson	Oxford, N. J	50	Do.
		H. C. Vanderveer	Whitehouse, N. J	50	Do.
		J. Walter Ingham	Phillipsburg, N. J	50	Do.
		G. Cesar	Franklin Furnace, N. J	50	Do.
		Hoffman & Hildebrandt	Lebanon, N. J	50	Do.
		C. E. Blackwell	Reaville, N. J	50	Do.
		Rev. G. H. Campbell	Beattystown, N. J	50	Do.
		Geo. H. Reading	Ravenrock, N. J	50	Do.
		American Forcite Powder Works	Landing, N. J	50	Do.
		J. F. McLean	Butler, N. J	50	Do.
		W. H. K. Depue	1221 H street northeast, Washington, D. C	100	Do.
		Geo. C. Apgar	Woodglen, N. J	50	Do.
		M. W. Weller	Portland, Pa	50	Do.
Pickler, J. A	South Dakota	Hon. J. A. Pickler	House of Representatives, Washington, D. C	200	May 19, 1896
		Miscellaneously addressed	South Dakota	300	Do.
		H. U. Babcock	Athol, S. Dak	100	Do.
		J. H. Gropengeiser	Oneida, S. Dak	100	Do.
		J. D. Rogers	Britton, S. Dak	100	Do.
		R. J. Taylor	Castlewood, S. Dak	100	Do.
		R. Dollard	Scotland, S. Dak	100	Do.
		John Peitz	Eureka, S. Dak	100	Do.
		Doan Robinson	Gary, S. Dak	100	Do.
		W. H. Roddle	Brookings, S. Dak	100	Do.
		W. A. Prather	Chandler, S. Dak	100	Do.
		Geo. E. Foster	Alexandria, S. Dak	100	Do.
		O. S. Gifford	Canton, S. Dak	100	Do.
		Sam Elrod	Clark, S. Dak	100	Do.
		J. A. Bushfield	Miller, S. Dak	100	Do.
		L. A. Foote	Kimball, S. Dak	100	Do.
		A. D. Kellar	Elkpoint, S. Dak	100	Do.
		A. B. Lucus	Castalia, S. Dak	100	Do.
		S. S. Lockhard	Meilbank, S. Dak	100	Do.
		C. J. Lavary	Fort Pierre, S. Dak	100	Do.
		Sam Howard	Gettysburg, S. Dak	100	Do.
		C. G. Sherwood	Clark, S. Dak	100	Do.
		H. U. Johnson	Armour, S. Dak	100	Do.
		D. H. Latham	Hankton, S. Dak	100	Do.
		Jno. Cashmer	Spearfish, S. Dak	100	May 28, 1896
		G. L. Kirk	Castalia, S. Dak	100	Do.

		H. J. Rice	Huron, S. Dak	100	Do.
		Samuel Howard	Gettysburg, S. Dak	100	Do.
		J. A. Bushfield	Miller, S. Dak	100	Do.
		Jas. Lewis	Canton, S. Dak	100	Do.
		G. H. Hoffman	Bangor, S. Dak	100	Do.
		T. E. Camburn	Pitney, S. Dak	100	Do.
		Colonel James	Whitewood, S. Dak	100	Do.
		Saml. Shankland	Custer, S. Dak	100	Do.
Poole, Theo. L.	New York	Hon. Theo. L. Poole	Care A. W. Wilkin, McGill Building, Washington, D. C.	87	May 18, 1896
		Jas. L. Schenck	Plainville, N. Y	62	Do.
		Geo. L. Hoyt, secretary Grange 471, Patrons of Husbandry.	Lafayette, N. Y	62	Do.
		G. L. Phillips, secretary Grange 753, Patrons of Husbandry.	Lebanon, N. Y	62	Do.
		Luella Young, secretary Grange 469, Patrons of Husbandry.	Cigarville, N. Y	62	Do.
		Mrs. C. E. Hall, secretary Grange 468, Patrons of Husbandry.	Marcellus, N. Y	62	Do.
		A. Davis, secretary Grange 649, Patrons of Husbandry.	Euclid, N. Y	62	Do.
		Miss Mary Hayden, secretary Grange 644, Patrons of Husbandry.	Lysander, N. Y	62	Do.
		Eugene Breed, secretary Grange 634, Patrons of Husbandry.	Memphis, N. Y	62	Do.
		Mrs. H. C. Stowell, secretary Grange 716, Patrons of Husbandry.	Madison, N. Y	62	Do.
		J. O. Shetler, secretary Grange 734, Patrons of Husbandry.	Bridgeport, N. Y	62	Do.
		H. K. Smith, secretary Grange 615, Patrons of Husbandry.	Nelson, N. Y	62	Do.
		Miss Josie Ransom, secretary Grange 670, Patrons of Husbandry.	Syracuse, N. Y	62	Do.
		Miss Alice Stevenson, secretary Grange 473, Patrons of Husbandry.	Collamer, N. Y	62	Do.
		H. Abrams, secretary Grange 466, Patrons of Husbandry.	Camillus, N. Y	62	Do.
		Palmer Brown, secretary Grange 605, Patrons of Husbandry.	Erieville, N. Y	62	Do.
		Wm. Stambois, jr., secretary Grange 640, Patrons of Husbandry.	Brookfield, N. Y	62	Do.
		J. D. Morse, secretary Grange 601, Patrons of Husbandry.	Cazenovia, N. Y	62	Do.
		C. P. Brown, secretary Grange 43, Patrons of Husbandry.	Canastota, N. Y	62	Do.
		Nettie Ella Fenner, secretary Grange 682, Patrons of Husbandry.	Onondaga, N. Y	62	Do.
		B. E. Wood, secretary Grange 651, Patrons of Husbandry.	Deruyter, N. Y	62	Do.
		Mrs. R. Moore, secretary Grange 609, Patrons of Husbandry.	Pompey Center, N. Y	62	Do.
		Mrs. Geo. Fairchild, secretary Grange 602, Patrons of Husbandry.	Liverpool, N. Y	62	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Poole, Theo. L.	New York	Jas. S. Jerome, secretary Grange 600, Patrons of Husbandry.	Fairmont, N. Y.	62	May 18, 1896
		E. Adams, secretary Grange 598, Patrons of Husbandry.	North Manlius, N. Y.	62	Do.
		Ella Dunn, secretary Grange 588, Patrons of Husbandry.	Samsons, N. Y.	62	Do.
		Mrs. H. M. Sheppard, secretary Grange 529, Patrons of Husbandry.	Cicero, N. Y.	62	Do.
		Clara M. King, secretary Grange 517, Patrons of Husbandry.	Vespers, N. Y.	62	Do.
		C. E. Bond, secretary Grange 614, Patrons of Husbandry.	Fenner, N. Y.	62	Do.
		Miscellaneously addressed	New York, N. Y.	185	Do.
		J. H. Northrup, secretary Grange 713, Patrons of Husbandry.	West Eaton, N. Y.	62	Do.
		D. H. Richardson, secretary Grange 646, Patrons of Husbandry.	Cardiff, N. Y.	62	Do.
		W. T. Stevens, secretary Grange 220, Patrons of Husbandry.	Jordan, N. Y.	62	Do.
		L. L. Woodford, secretary Grange 616, Patrons of Husbandry.	Berwyn, N. Y.	62	Do.
		O. W. Louchs, secretary Grange 688, Patrons of Husbandry.	Chittenango, N. Y.	62	Do.
		C. J. Taylor, secretary Grange 618, Patrons of Husbandry.	Oran, N. Y.	62	Do.
		A. W. Hotchkiss, secretary Grange 464, Patrons of Husbandry.	Howlett Hill, N. Y.	62	Do.
		J. J. Howe secretary Grange 486, Patrons of Husbandry.	Delphi, N. Y.	62	Do.
		J. M. Elmore, secretary Grange 603, Patrons of Husbandry.	New Woodstock, N. Y.	62	Do.
		Frank Holmes, secretary Grange 456, Patrons of Husbandry.	Marietta, N. Y.	62	Do.
		Jos. Thomas, secretary Grange 667, Patrons of Husbandry.	Amboy, N. Y.	62	Do.
		J. W. Crowell, secretary Grange 770, Patrons of Husbandry.	Pooleville, N. Y.	62	Do.
		F. L. Bentley, secretary Grange 458, Patrons of Husbandry.	Skaneateles, N. Y.	62	Do.
		A. Evelyn, secretary Grange 648, Patrons of Husbandry.	Hamilton, N. Y.	62	Do.
		S. Clark, secretary Grange 617, Patrons of Husbandry.	Tully, N. Y.	62	Do.

		Jno. Gregg, secretary Grange 610, Patrons of Husbandry.	Fayetteville, N. Y	62	Do.
Quay, M. S	Pennsylvania	Hon. T. L. Poole	McGill Building, Washington, D. C	1,000	May 22, 1896
		Hon. C. C. Thompson	Warren, Pa	250	May 15, 1896
		Miscellaneous individuals	Miscellaneous addresses in Pennsylvania	390	Do.
		Hon. W. H. Andrews	Titusville, Pa	300	Do.
		Dr. P. F. Fulmer	Dingmans Ferry, Pa	50	Do.
		A. M. Halberstadt	Moslem, Pa	50	Do.
		B. R. Focht	Lewisburg, Pa	300	May 20, 1896
		Hon. W. T. Morrick	Blossburg, Pa	100	May 27, 1896
		Hon. John J. Coyle	Mahonoy City, Pa	200	Do.
		Hon. W. H. Andrews	Titusville, Pa	200	Do.
		Hon. J. C. Harvey	Harveysville, Pa	200	Do.
		Hon. John Johnson	Bellevue, Pa	100	Do.
		Hon. S. M. Williams	Everett, Pa	100	Do.
		Hon. C. C. Bingham	Allentown, Pa	100	Do.
Quigg, L. E	New York	Hon. L. E. Quigg	Shoreham Hotel, Washington, D. C	3,000	May 18, 1896
		do	do	1,000	May 22, 1896
Roach, W. N	North Dakota	Miscellaneous individuals	Miscellaneous addresses in North Dakota	3,000	May 14, 1896
		do	do	452	May 20, 1896
		do	do	490	May 28, 1896
Raney, J. H	Missouri	do	Miscellaneous addresses in Missouri	1,557	May 14, 1896
		Wash Sites	Castor, Mo	39	Do.
		Chris. Rhodes	do	39	Do.
		Jno. B. Wakefield	Coldwater, Mo	39	Do.
		Jno. Vincent	Fredericktown, Mo	39	Do.
		T. M. Grisham	Lowndes, Mo	39	Do.
		Prof. L. M. Wagner	Grayelton, Mo	39	Do.
		Capt. W. I. Hunter	Potosi, Mo	39	Do.
		Wm. F. Eddington	Hilisboro, Mo	39	Do.
		Wm. Gray	Ironton, Mo	39	Do.
		Thos. H. Musick	Mount Grove, Mo	39	Do.
		J. F. Budd	Birchtree, Mo	39	Do.
		Ed. A. Rozier	St Genevieve, Mo	39	Do.
		O. R. Winslow	Marshfield, Mo	39	Do.
		M. W. Gustin	Salem, Mo	39	Do.
		Frank Stephens	Fredericktown, Mo	39	Do.
		Richard Barber	do	39	Do.
		L. A. W. Clomuger	do	39	Do.
		Jno. D. Young	Houston, Mo	39	Do.
		E. Pegg	Farmington, Mo	39	Do.
		F. M. Carter	do	39	Do.
		T. K. Paul	Marshfield, Mo	39	Do.
		Jno. Russell	Centerville, Mo	39	Do.
		E. A. Drake	Cassville, Mo	39	Do.
		Edw. Perringher	Fredericktown, Mo	39	Do.
		Henry Belkin	do	39	Do.
		A. H. Eaton	Foote, Mo	39	Do.
		Judge C. Weigenstein	Fredericktown, Mo	39	Do.
		Wm. Rhodes	do	39	Do.
		Jno. O. Smith	do	39	Do.
		Sam King	do	39	Do.
		Andrew Ruth	do	39	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Raney, J. H	Missouri	Jasper McCollum	Fredericktown, Mo	39	May 14, 1896
		A. V. Cashion	Perryville, Mo	39	Do.
		Capt. L. W. Hutchinson	Vanburen, Mo	39	Do.
		Wm. N. Nalle	Fredericktown, Mo	39	Do.
		Jos. Tesseman	do	39	Do.
		Carl Scharaner	do	39	Do.
		Jacob Lutes	Marquand, Mo	39	Do.
		Wm. Mathews	do	39	Do.
		Miscellaneous individuals	Miscellaneous addresses in Missouri	60	May 20, 1896
Ray, Geo. W	New York	Hon. Geo. W. Ray	House of Representatives, Washington, D. C	3,000	May 15, 1896
		do	Norwich, N. Y	1,000	May 21, 1896
Reed, T. B	Maine	Miscellaneous individuals	Miscellaneous addresses in Maine	2,100	May 16, 1896
		Amos L. Allen	Speaker's room, House of Representatives, Washington, D. C.	300	Do.
		H. F. Farnham	Portland, Me	600	Do.
Reeves, Walter	Illinois	Hon. Walter Reeves	Hotel Varnum, Washington, D. C	3,000	May 5, 1896
Reyburn, J. E	Pennsylvania	Hon. J. E. Reyburn	1301 Connecticut avenue, Washington, D. C	3,000	Apr. 30, 1896
		do	do	1,000	May 22, 1896
Richardson, J. D	Tennessee	Hon. J. D. Richardson	Committee on Printing, House of Representatives, Washington, D. C.	1,582	May 6, 1896
		J. H. Critchlow	Murfreesboro, Tenn	100	Do.
		Miscellaneous individuals	Miscellaneous addresses in Tennessee	1,318	Do.
		Postmaster	Normandy, Tenn	100	May 21, 1896
		do	Mulberry, Tenn	100	Do.
		do	Rover, Tenn	100	Do.
		do	Chapelhill, Tenn	100	Do.
		do	Unionville, Tenn	100	Do.
		do	Cornersville, Tenn	100	Do.
		do	Farmington, Tenn	100	Do.
		do	Bradyville, Tenn	100	Do.
		do	Flintville, Tenn	100	Do.
		do	Howell, Tenn	100	Do.
		N. A. Hamilton, postmaster	Elora, Tenn	200	May 28, 1896
		Postmaster	Auburn, Tenn	200	Do.
		do	Flatcreek, Tenn	200	Do.
		U. S. McClellan, postmaster	Alexandria, Tenn	200	Do.
		Jno. R. Davidson, postmaster	Petersburg, Tenn	200	Do.
		Hon. J. D. Richardson	1103 Sixth street northwest, Washington, D. C	1,000	June 6, 1896
Robertson, S. M	Louisiana	Hon. S. M. Robertson	Baton Rouge, La	3,000	Apr. 27, 1896
		do	do	1,000	May 21, 1896
Robinson, J. B	Pennsylvania	John Slandring	Lenni Mills, Pa	50	May 12, 1896
		Michael Burnley	Garrettford, Pa	50	Do.
		R. R. Johnson	Manoa, Pa	25	Do.
		Chas. Redheffer	Morton, Pa	25	Do.

		Edwin B. Kelley	Holmes, Pa	25	Do.
		Phillip H. Moore	Broomall, Pa	100	Do.
		J. H. Marshall	Sharonhill, Pa	100	Do.
		John Montgomery	Secane, Pa	100	Do.
		Wm. P. Hippel	Broomall, Pa	150	Do.
		Capt. Joseph H. Huddell	Linwood, Pa	500	Do.
		Miscellaneous individuals	Miscellaneous addresses in Pennsylvania	77	Do.
		Capt. H. A. Cobaugh	2134 I street, Washington, D. C	798	Do.
		Frank Robinson	Secane, Pa	1,000	Do.
		Hon. Jno. B. Robinson	1708 Rhode Island avenue, Washington, D. C	1,000	May 22, 1896
Royse, L. W	Indiana	Miscellaneous individuals	Miscellaneous addresses in Indiana	2,297	May 11, 1896
		Hon. L. W. Royse	House of Representatives, Washington, D. C	703	Do.
Rusk, H. W	Maryland	Hon. H. W. Rusk	do	2,512	May 7, 1896
		Miscellaneous individuals	Miscellaneous addresses in Maryland	488	Do.
		do	do	67	May 28, 1896
Russell, Benjamin E	Georgia	Hon. B. E. Russell	Mount Vernon Hotel, Washington, D. C	822	May 2, 1896
		Miscellaneous individuals	Miscellaneous addresses in Georgia	2,178	Do.
		Hon. B. E. Russell	Mount Vernon Hotel, Washington, D. C	1,000	May 21, 1896
Russell, C. A	Connecticut	Hon. C. A. Russell	Hotel Hamilton, Washington, D. C	3,000	May 13, 1896
		do	do	1,000	May 21, 1896
Stahle, J. A	Pennsylvania	Miscellaneously addressed	Pennsylvania	2,000	May 9, 1896
		Hon. J. A. Stahle	1224 S street northwest, Washington, D. C	1,000	Do.
		do	House of Representatives, Washington, D. C	1,000	May 22, 1896
Sewell, W. J	New Jersey	Hon. W. J. Sewell	United States Senate, Washington, D. C	3,000	Apr. 20, 1896
		do	do	1,000	May 22, 1896
Sherman, J	Ohio	Hon. J. Sherman	do	2,490	May 12, 1896
		Miscellaneously addressed	Ohio	510	Do.
		do	do	776	May 25, 1896
		Hon. J. Sherman	United States Senate, Washington, D. C	224	Do.
Shoup, G. L	Idaho	Hon. G. L. Shoup	do	155	May 19, 1896
		Miscellaneously addressed	Idaho	205	Do.
		Geo. B. Rogers	Blackfoot, Idaho	80	Do.
		R. A. Cowden	Caldwell, Idaho	100	Do.
		J. T. Sprague	Mountainhome, Idaho	50	Do.
		Postmaster	Nichobia, Idaho	15	Do.
		F. Fletcher	Middle Valley, Idaho	100	Do.
		Geo. Little	Caldwell, Idaho	40	Do.
		Jno. McMillan	Mayfield, Idaho	79	Do.
		Dr. I. H. Moore	Blackfoot, Idaho	20	Do.
		Edw. O'Neal	Morse, Idaho	25	Do.
		Wm. Budge	Paris, Idaho	99	Do.
		Jas. T. Conly	Nez Perces Agency, Idaho	50	Do.
		Jno. L. Smith	Oakley, Idaho	100	Do.
		W. W. Clarke	Montpelier, Idaho	100	Do.
		Geo. D. Golden	Rockybar, Idaho	40	Do.
		B. F. Mallory	Hailey, Idaho	40	Do.
		C. F. Davis	Malad City, Idaho	140	Do.
		Jno. L. Baxter	Soldier, Idaho	150	Do.
		Jas. Hanrah	Houston, Idaho	61	Do.
		Wm. H. Watt	Hailey, Idaho	40	Do.
		Postmaster	Muldoon, Idaho	30	Do.
		Thos. Glenn	Ola, Idaho	100	Do.
		R. D. Browne	Moscow, Idaho	100	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Shoup, G. L	Idaho	Chas. A. Myer	Placerville, Idaho	40	May 19, 1896
		Ruel Rounds	Idaho Falls, Idaho	150	Do.
		Thos. A. Davis	Cherrycreek, Idaho	100	Do.
		Jas. D. Daly	Meridian, Idaho	150	Do.
		Geo. C. Parkinson	Preston, Idaho	50	Do.
		Chas. M. Brown	Atlanta, Idaho	40	Do.
		H. C. Lewis	Ketchum, Idaho	20	Do.
		A. S. Lenter	Shoshone, Idaho	100	Do.
		S. G. Rhoades	Mountainhome, Idaho	20	Do.
		Wm. H. Shoup	Salmon, Idaho	30	Do.
		Dan'l Gamble	Moscow, Idaho	100	Do.
		E. H. Dewey	Silver City, Idaho	20	Do.
		Miscellaneously addressed	Idaho	40	Do.
		Neal J. Shoup	Challis, Idaho	80	Do.
		W. A. Weaver	Lewisville, Idaho	100	Do.
		Hon. G. L. Shoup	United States Senate, Washington, D. C	1,000	May 25, 1896
Smith, J., jr	New Jersey	Miscellaneously addressed	New Jersey	388	May 7, 1896
		Hon. J. Smith, jr	Maltby Building, Washington, D. C	2,612	Do.
		do	do	1,000	May 27, 1896
Squire, W. C	Washington	Hon. W. C. Squire	United States Senate, Washington, D. C	3,000	May 20, 1896
		do	do	1,000	May 22, 1896
Stewart, Wm. M	Nevada	Hon. Wm. M. Stewart	do	3,000	May 20, 1896
Sauerhering, E	Wisconsin	Hon. E. Sauerhering	The Oxford, Washington, D. C	3,000	May 13, 1896
		Miscellaneously addressed	Wisconsin	1,000	May 20, 1896
Sayers, J. D	Texas	do	Texas	2,193	Apr. 27, 1896
		Hon. J. D. Sayers	House of Representatives, Washington, D. C	807	Do.
		do	do	1,000	May 21, 1896
Scranton, J. A	Pennsylvania	Hon. J. A. Scranton	do	100	May 11, 1896
		Miscellaneously addressed	Pennsylvania	2,900	Do.
		Hon. J. A. Scranton	House of Representatives, Washington, D. C	1,000	May 21, 1896
Stokes, J. W	South Carolina	Miscellaneously addressed	South Carolina	3,000	Apr. 23, 1896
Settle, Thomas	North Carolina	Hon. Thomas Settle	House of Representatives, Washington, D. C	3,000	Do.
		do	do	1,000	May 25, 1896
Shafroth, J. F	Colorado	Miscellaneously addressed	Colorado	1,659	May 8, 1896
		Hon. J. F. Shafroth	2819 Fourteenth street northwest, Washington, D. C.	1,341	Do.
		do	do	1,000	May 22, 1896
Shannon, R. C	New York	J. W. Kelgard	Cooper Union Building, New York City	2,400	May 15, 1896
		Hon. R. C. Shannon	The Shoreham, Washington, D. C	600	Do.
		do	Washington Loan and Trust Building, Washington, D. C.	1,000	May 27, 1896
Shaw, J. C	North Carolina	Miscellaneously addressed	North Carolina	2,504	May 15, 1896
		do	do	1,000	May 27, 1896
		do	do	575	May 28, 1896

Sherman, J. S	New York	do	New York	3,000	May 18, 1896
		do	do	380	May 20, 1896
Shuford, A. C	North Carolina	Hon. A. C. Shuford	1714 Fifteenth street northwest, Washington, D. C	3,000	Apr. 24, 1896
		do	do	1,000	May 22, 1896
Simpkins, J	Massachusetts	Hon. J. Simpkins	House of Representatives, Washington, D. C	1,731	May 19, 1896
		Miscellaneously addressed	Massachusetts	1,269	Do.
		do	do	34	May 28, 1896
		Hon. J. Simpkins	922 Fourteenth street northwest, Washington, D. C	966	Do.
Skinner, H	North Carolina	Miscellaneously addressed	North Carolina	277	Apr. 29, 1896
		Hon. H. Skinner	1622 Nineteenth street northwest, Washington, D. C.	2,723	Do.
		do	do	1,000	May 21, 1896
Smith, G. W	Illinois	Miscellaneously addressed	Illinois	3,000	May 4, 1896
Smith, W. A	Michigan	E. R. Brooks	801 H street northwest, Washington, D. C	150	May 15, 1896
		D. C. Lyle	Cedar Springs, Mich	150	Do.
		Hon. W. A. Smith	Grand Rapids, Mich	150	Do.
		D. G. Look	Lowell, Mich	75	Do.
		V. G. Connor	Ionia, Mich	75	Do.
		Miscellaneously addressed	Michigan	2,400	Do.
		do	do	159	May 20, 1896
		Hon. W. A. Smith	801 H street northwest, Washington, D. C	25	May 28, 1896
		Dr. A. G. Burnell	Byron Center, Mich	100	Do.
		E. B. Lapham	Belding, Mich	100	Do.
		S. P. Hicks	Lowell, Mich	100	Do.
		E. L. Brooks	Gratlan, Mich	100	Do.
		F. G. Mawren	Portland, Mich	100	Do.
		William Whipple, jr	Georgetown, Mich	100	Do.
		Hon. W. O. Webster, jr	Ionia, Mich	100	Do.
		D. C. Lyle	Cedar Springs, Mich	100	Do.
		William Fitzgibbon	Saranac, Mich	100	Do.
		Hon. Neal McMillan	Rockford, Mich	100	Do.
		Hon. W. A. Smith	801 H street northwest, Washington, D. C	25	Do.
		F. R. Chase	Smyrna, Mich	75	Do.
		Bartel Jonker	Grand Rapids, Mich	100	Do.
		Wm. Gibbs	do	100	Do.
		Jos. Gloncyniski	do	100	Do.
		Fred. Dodge	do	100	Do.
		H. Miner	Lake Odessa, Mich	100	Do.
		Nelson Kelly	Dullton, Mich	100	Do.
		Hon. R. D. Graham	Grand Rapids, Mich	100	Do.
		Henry Meyers	Sparta, Mich	100	Do.
		D. M. Winters	Ada, Mich	100	Do.
Snover, H. G	Michigan	Miscellaneously addressed	Michigan	2,795	May 15, 1896
		Hon. H. G. Snover	603 North Carolina avenue southeast, Washington, D. C.	205	Do.
		do	Port Austin, Mich	1,000	May 21, 1896
Sorg, P. J	Ohio	Miscellaneously addressed	Ohio	3,000	May 8, 1896
		do	do	1,000	May 25, 1896
Southard, J. H	do	Hon. J. H. Southard	211 North Capitol street, Washington, D. C	3,000	May 2, 1896
		do	do	1,000	May 22, 1896
Strong, L. M	do	Miscellaneously addressed	Ohio	2,800	May 2, 1896
		Hon. L. M. Strong	Hotel Varnum, Washington, D. C	200	Do.
		do	do	1,000	May 21, 1896

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Southwick, G. N	New York	Hon. G. N. Southwick	Albany, N. Y	3,000	May 18, 1896
		do	do	1,000	May 22, 1896
Spalding, Geo	Michigan	Hon. Geo. Spalding	202 New Jersey avenue southeast, Washington, D. C.	1,323	May 12, 1896
		Miscellaneously addressed	Michigan	1,677	Do.
		Hon. Geo. Spalding	Monroe, Mich	700	May 25, 1896
Sparkman, S. M	Florida	Hon. S. M. Sparkman	Metropolitan Hotel, Washington, D. C	2,750	Apr. 23, 1896
		Hon. W. D. Chipley	Pensacola, Fla	200	Do.
		F. M. Williams	do	50	Do.
		Hon. S. M. Sparkman	209 C street northwest, Washington, D. C	1,000	May 23, 1896
Spencer, J. G	Mississippi	Hon. J. G. Spencer	109 Maryland avenue northeast, Washington, D. C	100	Apr. 27, 1896
		Miscellaneously addressed	Mississippi	2,900	Do.
		do	do	1,000	May 23, 1896
Sperry, N. D	Connecticut	Hon. N. D. Sperry	Buckingham Hotel, Washington, D. C	911	May 18, 1896
		Miscellaneously addressed	Connecticut	2,089	Do.
		do	do	119	May 23, 1896
		B. J. Maltby	Northford, Conn	50	Do.
		O. Floyd Steele	Middletown, Conn	50	Do.
		H. S. Brooks	New Haven County Grange, Cheshire, Conn	50	Do.
		A. S. Ostrander	New Haven, Conn	100	Do.
Stallings, J. F	Alabama	Hon. J. F. Stallings	605 Pennsylvania avenue northwest, Washington, D. C.	3,000	Apr. 29, 1896
		do	do	1,000	May 22, 1896
Steele, G. W	Indiana	Miscellaneously addressed	Indiana	3,000	May 6, 1896
		do	do	496	May 20, 1896
		Warren Bigler	Wabash, Ind	126	May 27, 1896
		Dr. J. Z. Powell	Logansport, Ind	126	Do.
		M. Garrigus	Kokomo, Ind	132	Do.
		W. H. Hart	Huntington, Ind	136	Do.
		H. G. Hamiker	Marion, Ind	136	Do.
		J. F. Lawrence	Peru, Ind	155	Do.
		H. L. Gard	Florence, Ind	179	Do.
		Hon. G. W. Steele	House of Representatives, Washington, D. C	14	Do.
Stephenson, S. M	Michigan	Miscellaneously addressed	Michigan	3,000	May 14, 1896
		Hon. S. M. Stephenson	Ebbitt House, Washington, D. C	1,000	May 22, 1896
Stewart, Alex	Wisconsin	Hon. Alex Stewart	Kellogg Building, Washington, D. C	2,900	May 15, 1896
		Miscellaneously addressed	Wisconsin	100	Do.
		Geo. W. Latta	Antigo, Wis	75	May 25, 1896
		J. C. Lewis	do	75	Do.
		M. J. Walrick	Shawano, Wis	75	Do.
		R. Jackson	do	75	Do.
		Geo. W. Bishop	Rhinelander, Wis	100	Do.
		A. R. Osborn	Ashland, Wis	100	Do.
		A. L. Osborn	Gile, Wis	100	Do.

		W. H. Bradley	Tomahawk, Wis	100	Do.
		W. Alexander	Wausau, Wis	100	Do.
		Alex. McKenny	Angelica, Wis	50	Do.
		Professor Hamme	Wittenberg, Wis	50	Do.
		A. D. Cady	Birnamwood, Wis	50	Do.
		H. J. Blanchard	Colby, Wis	50	Do.
Stewart, J. F	New Jersey	Hon. J. F. Stewart	Hotel Normandie, Washington, D. C	3,000	Apr. 29, 1896
		do	706 Tenth street northwest, Washington, D. C	1,000	May 21, 1896
Stokes, J. W	South Carolina	Hon. J. W. Stokes	205 New Jersey avenue northwest, Washington, D. C.	1,000	May 22, 1896
		Miscellaneously addressed	South Carolina	1,000	May 28, 1896
Stone, C. W	Pennsylvania	Hon. C. W. Stone	House of Representatives, Washington, D. C	179	May 9, 1896
		Miscellaneously addressed	Pennsylvania	2,821	Do.
		do	do	175	May 27, 1896
		Hon C. W. Stone	House of Representatives, Washington, D. C	825	Do.
Stone, Wm. A	do	Hon. Wm. A. Stone	1721 Q street northwest, Washington, D. C	196	May 12, 1896
		Miscellaneously addressed	Pennsylvania	2,804	Do.
Strait, T. J	South Carolina	do	South Carolina	3,000	May 1, 1896
		Hon T. J. Strait	Lancaster, S. C	1,000	May 25, 1896
Strode, J. B	Nebraska	Hon. J. B. Strode	924 Fourteenth street northwest, Washington, D. C	929	May 12, 1896
		Miscellaneously addressed	Nebraska	272	Do.
		W. A. Campbell	Tecumseh, Nebr	50	Do.
		J. D. Kerthly	Weeping Water, Nebr	50	Do.
		H. J. Leisveldt	Hickman, Nebr	50	Do.
		Chas. Graves	Union, Nebr	50	Do.
		Grand Army post	Pennett, Nebr	50	Do.
		Chas. Heaber	Rulo, Nebr	50	Do.
		D. McCaig	Wabash, Nebr	50	Do.
		C. D. Clapp	Elmwood, Nebr	50	Do.
		Chas. Marshall	Douglas, Nebr	50	Do.
		J. O Moore	Palmyra, Nebr	50	Do.
		W J. Crandall	Firth, Nebr	50	Do.
		D. A. Harris	Unadilla, Nebr	50	Do.
		Jack Farley	Nebraska City, Nebr	50	Do.
		H. C. McMahen	Plattsmouth, Nebr	50	Do.
		A. R. Keim	Falls City Nebr	50	Do.
		Lewis Dunn	Paul, Nebr	50	Do.
		M. D. Polk	Plattsmouth, Nebr	50	Do.
		Geo. W. Mayfield	Louisville, Nebr	25	Do.
		M. H. Marble	Tablerock, Nebr	25	Do.
		Henry Matters	Burchard, Nebr	25	Do.
		J. R Cain	Stella, Nebr	25	Do.
		M. Ryan	Dawson, Nebr	25	Do.
		Geo. W. Fairbrother	Branville, Nebr	25	Do.
		E. C. Strode	Lincoln, Nebr	30	Do.
		P. W. Howe	do	200	Do.
		Woman's Relief Corps, G. A. R	Crab Orchard, Nebr	50	Do.
		do	Syracuse, Nebr	50	Do.
		do	Waverly, Nebr	50	Do.
		do	Weeping Water, Nebr	50	Do.
		do	Pawnee City, Nebr	50	Do.
		do	Auburn, Nebr	50	Do.
		do	Tecumseh, Nebr	50	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Strode, J. B	Nebraska	Woman's Relief Corps, G. A. R	Greenwood, Nebr	50	May 12, 1896
		do	Nebraska City, Nebr	50	Do.
		do	Plattsmouth, Nebr	50	Do.
		do	Humboldt, Nebr	50	Do.
		do	Dawson, Nebr	50	Do.
		do	Salem, Nebr	50	Do.
		do	Falls City, Nebr	50	Do.
		do	Burchard, Nebr	50	Do.
		President Woman's Relief Corps, G. A. R., Farragut Post, No. 5.	Lincoln, Nebr	100	Do.
		J. J. Bernard	Lewiston, Nebr	50	May 21, 1896
		L. A. Varner	Sterling, Nebr	50	Do.
		R. E. Grimstead	Salem, Nebr	50	Do.
		C. R. Judkin	Tablerock, Nebr	50	Do.
		O. A. Bailey	Crab Orchard, Nebr	50	Do.
		A. F. Sturm	Nehawka, Nebr	50	Do.
		N. Steinaur	Steinhauer, Nebr	50	Do.
		L. H. Woods	Violet, Nebr	50	Do.
		F. A. Creamer	South Bend, Nebr	50	Do.
		Hon. Jno. H. Shook	Barada, Nebr	50	Do.
		R. Wilkinson	Eagle, Nebr	50	Do.
		Patrick Roddy	Nebraska City, Nebr	50	Do.
		Tecumseh Chieftain	Tecumseh, Nebr	100	Do.
		A. E. Hassler	Pawnee City, Nebr	100	Do.
		Jno. Davis	Plattsmouth, Nebr	100	Do.
		F. Martin	Falls City, Nebr	100	Do.
Strowd, W. F	North Carolina	Hon. W. F. Strowd	715 Ninth street northwest, Washington, D. C	3,000	Apr. 27, 1896
		do	do	1,000	May 22, 1896
Sulloway, C. A	New Hampshire	Miscellaneously addressed	New Hampshire	2,740	May 18, 1896
		Hon. C. A. Sulloway	Hotel Varnum, Washington, D. C	260	Do.
		do	do	1,000	May 21, 1896
Sulzer, Wm	New York	Miscellaneous individuals	Miscellaneous addresses, New York	25	May 18, 1896
		J. N. Kilgord	New York City	100	Do.
		Miss Grace Howard	Crow Creek Agency, S. Dak	100	Do.
		Hon. Wm. Sulzer	131 B street southeast, Washington, D. C	2,075	Do.
		do	45 Broadway, New York City	600	Do.
		do	House of Representatives, Washington, D. C	100	Do.
		do	45 Broadway, New York City	1,000	May 28, 1896
Swanson, C. A	Virginia	Miscellaneous individuals	Miscellaneous addresses, Virginia	3,000	May 8, 1896
		do	do	1,497	May 20, 1896
		do	do	1,013	Do.
		do	do	1,978	Do.
		do	do	2,678	Do.
		do	do	5,495	May 28, 1896

Thomas, H. F	Michigan	do	Miscellaneous addresses, Michigan	3,000	May 15, 1896
		do	do	371	May 20, 1896
		do	do	963	May 28, 1896
Teller, H. M	Colorado	do	Miscellaneous addresses, Colorado	2,958	May 7, 1896
		Hon. H. M. Teller	1431 Rhode Island avenue, Washington, D. C	42	Do.
		do	United States Senate, Washington, D. C	1,000	May 22, 1896
Thurston, J. M	Nebraska	Hon. J. M. Thurston	Maltby Building, Washington, D. C	840	May 8, 1896
		Miscellaneous individuals	Miscellaneous addresses, Nebraska	2,160	Do.
		do	do	1,000	May 23, 1896
Tillman, B. R	South Carolina	Hon. B. R. Tillman	Maltby Building, Washington, D. C	3,000	Apr. 24, 1896
		do	do	1,000	May 22, 1896
Turpie, D	Indiana	Hon. D. Turpie	do	1,000	May 7, 1896
		Miscellaneous individuals	Miscellaneous addresses, Indiana	2,900	Do.
		Hon. D. Turpie	Maltby Building, Washington, D. C	100	May 20, 1896
		Mr. Behrmer, editor Times	Tipton, Ind	100	May 22, 1896
		H. E. Simmons, editor Democrat	Monticello, Ind	100	Do.
		Harry A. Barnhart	Rochester, Ind	100	Do.
		Editor of Democrat	Knox, Ind	100	Do.
		J. W. McEwen	Rensselaer, Ind	100	Do.
		B. F. Louthain	Logansport, Ind	100	Do.
		R. M. Isherwood	Delphi, Ind	100	Do.
		M. H. Ingram	Winamac, Ind	100	Do.
		D. McDonald	Plymouth, Ind	100	Do.
		Editor of Dispatch	Kokomo, Ind	100	Do.
Taft, C. P	Ohio	Saml. J. Pugh	Vanceburg, Ky	500	May 12, 1896
		S. R. Harris	Bucyrus, Ohio	500	Do.
		Hon. C. P. Taft	Care Times-Star, Cincinnati, Ohio	1,421	Do.
		Miscellaneous individuals	Miscellaneous addresses, Ohio	579	Do.
		Hon. Saml. J. Pugh	Vanceburg, Ky	500	May 28, 1896
		Hon. Chas. W. Wadsworth	House of Representatives, Washington, D. C	500	Do.
Talbert, W. J	South Carolina	Miscellaneous individuals	Miscellaneous addresses, South Carolina	2,900	Apr. 23, 1896
		Hon. W. J. Talbert	809 Ninth street northwest, Washington, D. C	100	Do.
		Miscellaneous individuals	Miscellaneous addresses, South Carolina	1,000	May 23, 1896
Tate, F. C	Georgia	Hon. F. C. Tate	Jasper, Ga	3,000	May 5, 1896
		do	do	1,000	May 27, 1896
Tayler, R. W	Ohio	Hon. R. W. Taylor	1363 Roanoke street northwest, Washington, D. C	2,822	May 9, 1896
		Miscellaneous individuals	Miscellaneous addresses, Ohio	178	Do.
		S. L. Fisher	Negley, Ohio	100	May 26, 1896
		Geo. H Huston	Rogers, Ohio	100	Do.
		Galen Sheets	Hanoverton, Ohio	100	Do.
		A. G. MacKenzie	Wellsville, Ohio	100	Do.
		J. W. Berkly	Wilmot, Ohio	100	Do.
		W. H. Owen	Clarkson, Ohio	100	Do.
		J. W. McClintock	Beach City, Ohio	100	Do.
		Chas. Andrews	Navarre, Ohio	100	Do.
		Chas. Shintz	New Berlin, Ohio	100	Do.
		S. Z. Whiteleather	North Georgetown, Ohio	100	Do.
Terry, W. L	Arkansas	Hon. W. L. Terry	Metropolitan Hotel, Washington, D. C	3,000	Apr. 23, 1896
		Miscellaneous individuals	Miscellaneous addresses, Arkansas	1,000	May 28, 1896
Tracey, J. P	Missouri	Hon. J. P. Tracey	1 B street northwest, Washington, D. C	3,000	May 4, 1896
		do	do	1,000	May 28, 1896
Tawney, J. A	Minnesota	Hon. J. A. Tawney	1407 F street northwest, Washington, D. C	284	May 19, 1896
		Miscellaneous individuals	Miscellaneous addresses, Minnesota	986	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Tawney, J. A	Minnesota	W. H. Feller	Elgin, Minn	25	May 19, 1896
		A. Hotson	Lyle, Minn	30	Do.
		George Vance	Houston, Minn	25	Do.
		R. Hoag	Money Creek, Minn	25	Do.
		E. Stevens	Winnebago Valley, Minn	25	Do.
		E. W. Kirkpatrick	Rushford, Minn	25	Do.
		George Plummer	Mazeppa, Minn	25	Do.
		J. M. Diment	Owatonna, Minn	125	Do.
		D. H. Stimson	Austin, Minn	125	Do.
		L. W. Tondro	Rochester, Minn	100	Do.
		Miscellaneous individuals	Miscellaneously addressed, Minnesota	290	Do.
		E. C. Johnson	St. Charles, Minn	35	Do.
		J. C. Brainerd	Blooming Prairie, Minn	40	Do.
		James Underleak	Chatfield, Minn	40	Do.
		O. H. Bronson	New Richland, Minn	40	Do.
		J. C. Mills	Preston, Minn	75	Do.
		C. F. Greening	Grand Meadows, Minn	75	Do.
		do	do	75	Do.
		Hon. J. A. Henry	Jamesville, Minn	50	Do.
		Wheaton Bros	Mabel, Minn	50	Do.
		W. G. Drowley	Caledonia, Minn	50	Do.
		J. C. Bartlett	Lake City, Minn	50	Do.
		C. C. Hirschy	Wabasha, Minn	50	Do.
		G. W. Palmer	Leroy, Minn	50	Do.
		T. D. Seaman	Alma City, Minn	30	Do.
		C. E. Bowdy	Eyota, Minn	30	Do.
		Charles Callaghan	Viola, Minn	30	Do.
		Theodore Chambers	Berlin, Minn	30	Do.
		E. S. Wooldridge	Stewartville, Minn	25	Do.
		O. K. Dahl	Springgrove, Minn	25	Do.
		C. M. Finch	Clinton Falls, Minn	30	Do.
		Hon. J. B. Kendall	Byron, Minn	30	Do.
		Miscellaneous individuals	Miscellaneously addressed, Minnesota	28	May 27, 1896
		H. O. Hankness	Albert Lea, Minn	100	Do.
		D. E. Tawney	Winona, Minn	50	Do.
		L. W. Tondro	Rochester, Minn	50	Do.
		J. M. Dument	Owatonna, Minn	50	Do.
		G. Seebach	Austin, Minn	50	Do.
Towne, C. A	do	Miscellaneous individuals	Miscellaneously addressed, Minnesota	1,308	May 19, 1896
		M. A. Hays	Minnesota headquarters, 1407 F street northwest, Washington, D. C.	62	Do.
		Joseph Bristow	Casnovia, Minn	40	Do.
		E. N. Ricker	Park Rapids, Minn	40	Do.
		J. M. Haven	Biglake, Minn	40	Do.

C. A. Lindbergh	Littlefalls, Minn	40	Do.
Charles S. Eastman	Madenna, Minn	40	Do.
J. G. Breckenridge	Pine City, Minn	25	Do.
W. D. McDonald	Annandale, Minn	25	Do.
G. W. Trofton	Curtis, Minn	25	Do.
C. A. Friend	Monticello, Minn	25	Do.
Fred. A. Ring	Grand Rapids, Minn	60	Do.
Hon. C. F. Hendryx	Sauk Center, Minn	60	Do.
T. H. Martin	Carlton, Minn	112	Do.
J. E. Cooley	Duluth, Minn	102	Do.
A. S. McMillan	Madena, Minn	50	Do.
J. W. Speelman	Beltramie, Minn	41	Do.
W. E. Culkim	Buffalo, Minn	45	Do.
W. C. McCremm	Casnovia, Minn	65	Do.
Jas. B. Beatty	Sauk Rapids, Minn	100	Do.
J. A. Frater	Brainerd, Minn	100	Do.
Hon. Joe M. Markham	Aitken, Minn	100	Do.
Theo. F. Koch	173 East Third street, St. Paul, Minn	100	Do.
T. A. Caswell	Anoka, Minn	100	Do.
E. B. Wood	Long Prairie, Minn	100	Do.
A. N. Dare	Elk River, Minn	100	Do.
Hon. Alvah Eastman	St. Cloud, Minn	70	Do.
Miscellaneous individuals	Miscellaneously addressed	23	May 25, 1896
E. A. Page	Carlton, Minn	50	Do.
J. T. Foster	Brainerd, Minn	50	Do.
T. F. Kirb	St. Paul, Minn	50	Do.
E. B. Word	Long Prairie, Minn	50	Do.
J. A. Casnell	Anoka, Minn	45	Do.
J. E. Cooloy	Duluth, Minn	45	Do.
L. C. Briggs	Princeton, Minn	45	Do.
Hon. A. N. Dare	Little River, Minn	45	Do.
J. B. Beatty	Sauk Rapids, Minn	45	Do.
Hon. A. Eastman	St. Cloud, Minn	45	Do.
Hon. W. E. Culkin	Buffalo, Minn	32	Do.
J. A. Wharton	Eage, Delano, Minn	25	Do.
H. S. McMillan	Wadena, Minn	25	Do.
B. C. Bartlett	Hinckley, Minn	25	Do.
J. Snedbark	Upsola, Minn	25	Do.
C. F. Hendryx	Sauk Center, Minn	25	Do.
F. J. Anderson	Belgrade, Minn	25	Do.
C. S. Eastman	Wadena, Minn	25	Do.
Jas. Coggesnill	Two Harbors, Minn	25	Do.
C. P. De Laittre	Aitken, Minn	25	Do.
Fred. H. King	Grand Rapids, Minn	25	Do.
C. A. Linderberg	Littlefalls, Minn	25	Do.
J. Gonska	Duluth, Minn	25	Do.
F. W. Johnson	Cokato, Minn	25	Do.
J. W. Breckenridge	Pine City, Minn	25	Do.
J. M. Haven	Biglake, Minn	25	Do.
C. A. French	Monticello, Minn	25	Do.
E. Eckerson	Green Prairie, Minn	25	Do.
J. W. Bonck	Roy Alton, Minn	25	Do.
F. W. Mayhew	Grand Marias, Minn	25	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Tracewell, R. J	Indiana	Miscellaneous individuals	Miscellaneously addressed, Indiana	2,483	May 6, 1896
		Hon. R. J. Tracewell	229 A street southeast, Washington, D. C	517	Do.
		do	Committee on Immigration, House of Representatives, Washington, D. C.	1,000	May 22, 1896
Treloar, W. M	Missouri	Hon. W. M. Treloar	215 East Capitol street, Washington, D. C	3,000	Apr. 30, 1896
		do	do	1,000	May 25, 1896
Tucker, H. St. G	Virginia	Miscellaneous individuals	Miscellaneously addressed, Virginia	419	May 6, 1896
		do	do	2,600	May 8, 1896
		Hon. H. St. G. Tucker	1329 M street northwest, Washington, D. C	400	Do.
		Miscellaneous individuals	Miscellaneously addressed, Virginia	679	Do.
		do	do	549	May 20, 1896
		Postmaster	Wilsonville, Va	50	May 27, 1896
		do	Collierstown, Va	50	Do.
		do	Lowesville, Va	50	Do.
		do	Glasgow, Va	50	Do.
		do	Eaglerock, Va	50	Do.
		do	Buchanan, Va	50	Do.
		do	Churchville, Va	50	Do.
		do	Monterey, Va	50	Do.
		do	Sandidges, Va	50	Do.
		Dr. N. E. Pratt	Buckingham, Va	50	Do.
		Postmaster	Springwood, Va	50	Do.
		do	Allwood, Va	50	Do.
		do	Pedlar Mills, Va	50	Do.
		do	Glen Wilton, Va	50	Do.
		do	Lovingston, Va	50	Do.
		do	Palmyra, Va	50	Do.
		do	Cumberland, Va	50	Do.
		do	Massies, Va	50	Do.
		do	Tyro, Va	50	Do.
		do	Langdale, Va	50	Do.
Turner, H. G	Georgia	Hon. H. G. Turner	House of Representatives, Washington, D. C	17	Apr. 30, 1896
		Miscellaneous individuals	Miscellaneously addressed, Georgia	2,983	Do.
Turner, S. S	Virginia	do	Miscellaneously addressed, Virginia	3,000	May 8, 1896
		Hon. S. S. Turner	Metropolitan Hotel, Washington, D. C	200	May 11, 1896
		Miscellaneous individuals	Miscellaneously addressed, Virginia	550	May 20, 1896
Tyler, D. G	do	do	do	2,590	May 8, 1896
		Hon. D. G. Tyler	House of Representatives, Washington, D. C	410	Do.
		do	do	1,000	May 21, 1896
Underwood, C. W	Alabama	Miscellaneous individuals	Miscellaneous addressed, Alabama	2,467	Apr. 30, 1896
		Hon. C. W. Underwood	Care W. Webb, 210 East Capitol street, Washington, D. C.	533	Do.
		do	do	1,000	May 28, 1896
Updegraff, T	Iowa	Miscellaneous individuals	Miscellaneously addressed, Iowa	2,561	May 11, 1896

		Gus Tupper	Osage, Iowa	49	Do.
		J. M. Genville	Harpers Ferry, Iowa	20	Do.
		Miscellaneous individuals	Miscellaneously addressed, Iowa	40	Do.
		F. H. Robbins	Waukon, Iowa	50	Do.
		C. D. Nichols	Cresco, Iowa	50	Do.
		H. Meyer	Elkader, Iowa	48	Do.
		Jno. Tooley	New Hampton, Iowa	48	Do.
		Hon. T. Updegraff	House of Representatives, Washington, D.C	48	Do.
		B. F. Thomas	Lansing, Iowa	48	Do.
		N. H. Spears	Westgate, Iowa	46	Do.
		C. H. Foster	McGregor, Iowa	50	May 23, 1896
		B. F. Thomas	Lansing, Iowa	50	Do.
		J. N. Molsbrey	Plymouth, Iowa	50	Do.
		C. F. Beeler	Marble Rock, Iowa	100	Do.
		W. E. Payne	St. Ansgar, Iowa	50	Do.
		W. E. Lamb	Northwood, Iowa	50	Do.
		Jno. Tooley	New Hampton, Iowa	50	Do.
		Hon. J. O. Crosby	Garnavillo, Iowa	50	Do.
		C. F. Gardner	Osage, Iowa	50	Do.
		Henry Munon	Elkader, Iowa	50	Do.
		W. H. Parker	Lawler, Iowa	50	Do.
		E. M. Carter	Hesper, Iowa	50	Do.
		Geo. Jameson	Oelwein, Iowa	50	Do.
		J. R. Bedow	Updegraff, Iowa	50	Do.
		A. Jacobson	Nordnep, Iowa	50	Do.
		H. C. Salisbury	Florenceville, Iowa	50	Do.
		B. W. Newberry	Strawberry Point, Iowa	50	Do.
		N. H. Spear	Westgate, Iowa	50	Do.
		J. S. Hutchins	Rockwell, Iowa	50	Do.
		B. N. Hindricks	Riceville, Iowa	50	Do.
Van Horn, R. T	Missouri	Miscellaneous individuals	Miscellaneously addressed, Missouri	62	May 20, 1896
		Mrs. R. T. Van Horn	Kansas City, Mo	300	Do.
		Hon. R. T. Van Horn	Committee on Labor, House of Representatives, Washington, D. C.	400	Do.
		do	House of Representatives, Washington, D. C	1,000	May 28, 1896
Van Voorhis, H. C	Ohio	Hon. H. C. Van Voorhis	The Hamilton, Washington, D. C	317	May 11, 1896
		Miscellaneous individuals	Miscellaneously addressed, Ohio	2,683	Do.
		do	do	909	May 20, 1896
		Hon. H. C. Van Voorhis	Zanesville, Ohio	1,000	May 25, 1896
Vest, G. G	Missouri	Hon. G. G. Vest	124 Massachusetts avenue northeast, Washington, D. C.	3,000	May 4, 1896
		do	do	1,000	May 21, 1896
Vilas, Wm. F	Wisconsin	Hon. Wm. F. Vilas	Maltby Building, Washington, D. C	113	May 20, 1896
		Miscellaneous individuals	Miscellaneously addressed, Wisconsin	67	Do.
		Hon. F. P. Coburn	West Salem, Wis	25	Do.
		Rev. E. O. Giesel	Platteville, Wis	25	Do.
		R. M. Crawford	Mineral Point, Wis	25	Do.
		Prof. J. C. Zinck	Edgerton, Wis	25	Do.
		Hon. A. Woodward	Clinton, Wis	25	Do.
		Rev. H. Rohrs	do	25	Do.
		Hon. R. J. McGeehan	Depere, Wis	25	Do.
		Hon. Levi Martin	Chippewa Falls, Wis	25	Do.
		Hon. R. B. Kirkland	Jefferson, Wis	25	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Vilas, Wm. F	Wisconsin	Rev. A. Bredeson	Stoughton, Wis	25	May 20, 1896
		Hon. H. H. Grace	West Superior, Wis	25	Do.
		Hon. J. J. Carter	Menomonee, Wis	25	Do.
		Hon. J. Bardon	Superior, Wis	25	Do.
		Hon. T. F. Solon	West Superior, Wis	25	Do.
		Hon. Mydon Reed	do	25	Do.
		Rev. F. Otte	Chippewa Falls, Wis	25	Do.
		J. M. Mathews	Menomonee, Wis	25	Do.
		J. H. Janda	Kewaunee, Wis	25	Do.
		F. L. Clarke	Augusta, Wis	25	Do.
		Rev. H. Baio	Merrill, Wis	25	Do.
		Hon. Jas. Barden	Superior, Wis	25	Do.
		Hon. Giles Stevens	Reedsburg, Wis	25	Do.
		Geo. W. Dyer	Boscobel, Wis	25	Do.
		P. Bartley	Bloomington, Wis	25	Do.
		Hon. Jno. Fetzer	Forestville, Wis	25	Do.
		Hon. Jno. Nagel	Manitowoc, Wis	25	Do.
		H. H. Nabor	Shawano, Wis	25	Do.
		Hon. Jno. Wattano	Kewaunee, Wis	25	Do.
		Hon. H. Grotopports	Baraboo, Wis	25	Do.
		Hon. A. Kull	Lake Geneva, Wis	25	Do.
		Hon. H. J. Schmitz	Manitowoc, Wis	25	Do.
		Rev. Chas. Papp	Wrightstown, Wis	25	Do.
		W. A. Hume	Chilton, Wis	25	Do.
		F. B. Saxton	Ellsworth, Wis	25	Do.
		Rev. L. J. Osterhus	Milwaukee, Wis	25	Do.
		Hon. Robt. Lees	Alma, Wis	25	Do.
		C. F. Ninman	Sauk City, Wis	25	Do.
		Hon. M. Johnson	Mount Horeb, Wis	25	Do.
		Hon. R. M. Bashford	Madison, Wis	125	Do.
		Lehman & Robinson	Greenbay, Wis	75	Do.
		H. D. Arkwright	Tomah, Wis	25	Do.
		Jos. Nutall	New Lisbon, Wis	25	Do.
		Dr. A. H. Krouskup	Richland Center, Wis	30	Do.
		Ellis B. Usher	La Crosse, Wis	30	Do.
		Hon. Theo. Kirsten	Chilton, Wis	30	Do.
		Col. J. H. Knight	Ashland, Wis	30	Do.
		Rev. R. C. Adelburg	Milwaukee, Wis	50	Do.
		Hon. T. C. Pound	Chippewa Falls, Wis	30	Do.
		Dr. F. W. A. Notz	Watertown, Wis	50	Do.
		Hyerman & Kuypers	Depere, Wis	50	Do.
		Hon. A. F. Ernst	Watertown, Wis	50	Do.
		Hon. H. O. Wilson	Janesville, Wis	50	Do.
		Hon. W. D. Merrill	Prairie du Chien, Wis	50	Do.

		Hon. Jas. M. Clancy	Stoughton, Wis	50	Do.
		Rev. John Schlerf	Milwaukee, Wis	50	Do.
		Jas. Bell	Vilas, Wis	50	Do.
		B. Esser	Ashton, Wis	50	Do.
		Hon. Wm. Kennedy	Appleton, Wis	50	Do.
		Hon. J. Morrow	Sparta, Wis	50	Do.
		M. F. Blumenfield	Madison, Wis	50	Do.
		Hon. W. H. Smith	Eau Galle, Wis	50	Do.
		Wm. Lysaight	Monroe, Wis	50	Do.
		Jos. G. Fox	Oregon, Wis	50	Do.
		L. M. Nash	Centralia, Wis	50	Do.
		Hon. W. H. Cameron	Madison, Wis	50	Do.
		J. B. Heim	do	50	Do.
		Hon. A. O. Wilson	Janesville, Wis	50	Do.
		Hon. Adam Apple	North Cape, Wis	50	Do.
		W. J. McCoy	Lancaster, Wis	50	Do.
		Hon. T. F. Frawley	Eau Claire, Wis	50	Do.
		J. W. Hume	Oshkosh, Wis	50	Do.
		A. C. Robinson	Greenbay, Wis	50	Do.
		Hon. Jas. Bardon	Superior, Wis	50	Do.
		J. P. Hume	Marshfield, Wis	50	Do.
		Dr. S. S. Johnson	Hudson, Wis	50	Do.
		Hon. Thos. Lynch	Antigo, Wis	50	May 27, 1896
		Hon. W. D. Merrill	Prairie du Chien, Wis	50	Do.
		J. E. Jones	Portage, Wis	50	Do.
		Gowdey & Goodell	Hurley, Wis	50	Do.
		Hon. Jas. Bracklin	Rice Lake, Wis	50	Do.
		Hon. Clinton Textor	Medford, Wis	50	Do.
		Hon. Jos. Vilas	Manitowoc, Wis	50	Do.
		C. J. Noel	Marinette, Wis	50	Do.
		Clarence Dennis	Ashland, Wis	50	Do.
		Hon. L. Marchetti	Wausau, Wis	50	Do.
		T. C. Blied & Co	Madison, Wis	50	Do.
		J. J. Miles	Ashland, Wis	50	Do.
		Shafer Bros	Colby, Wis	50	Do.
		Hon. N. Jenson	Edgerton, Wis	50	Do.
		Hon. Neal Brown	Wausau, Wis	50	Do.
		Jas. Devereux	Shell Lake, Wis	50	Do.
		S. O. Prince	Lyndville, Wis	25	Do.
		V. M. Babcock	Amery, Wis	25	Do.
		Hon. C. C. Kuntz	Sauk City, Wis	25	Do.
		Frank Boutin	Bayfield, Wis	25	Do.
		Hon. L. J. R. McCullom	Twinbluffs, Wis	25	Do.
		O. S. Holum	De Forest, Wis	25	Do.
		Hon. T. F. Solon	West Superior, Wis	25	Do.
		J. E. Horsman	Rice Lake, Wis	25	Do.
Voorhees, D. W	Indiana	Hon. D. W. Voorhees	Care of Hon. C. R. Faulkner, United States Senate, Washington, D. C.	100	May 12, 1896
		Miscellaneous individuals	Miscellaneously addressed, Indiana	692	Do.
		Rich. L. Coffey, chairman Brown County Democratic committee.	Nashville, Ind	50	Do.
		Chairman of the Ohio County Democratic committee.	Rising Sun, Ind	50	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Voorhees, D. W.	Indiana	Chairman of the Franklin County Democratic committee.	Brookville, Ind	50	May 12, 1896
		Geo. W. Pigman, chairman of the Union County Democratic committee.	Liberty, Ind	50	Do.
		A. M. Yellton, chairman of the Knox County Democratic committee.	Vincennes, Ind	50	Do.
		Thos. B. Rader, chairman of the Clark County Democratic committee.	Jeffersonville, Ind	50	Do.
		Hon. John Benz	Leavenworth, Ind	50	Do.
		G. M. Freeman, chairman of the Democratic committee.	Martin, Ind	50	Do.
		J. B. Thompson, chairman of the Parke County Democratic committee.	Rockville, Ind	50	Do.
		Chairman of the Dearborn County Democratic committee.	Lawrenceburg, Ind	50	Do.
		J. M. Cravens, chairman of the Jefferson County Democratic committee.	Madison, Ind	50	Do.
		Gurley Taylor, chairman of the Warrick County Democratic committee.	Boonville, Ind	50	Do.
		Chairman of the Perry County Democratic committee.	Cannelton, Ind	50	Do.
		C. E. De Haven, chairman of Fountain County Democratic committee.	Covington, Ind	50	Do.
		G. S. Pleasant, chairman of Switzerland County Democratic committee.	Vevay, Ind	50	Do.
		E. W. McIntosh, chairman of Greene County Democratic committee.	Bloomfield, Ind	50	Do.
		Jno. Hillendrand	Batesville, Ind	50	Do.
		A. G. Holcomb, chairman of Gibson County Democratic committee.	Oakland City, Ind	50	Do.
		Chas. M. Gray, chairman of Ripley County Democratic committee.	Osgood, Ind	50	Do.
		M. B. Hottle, chairman of the Washington County Democratic committee.	Salem, Ind	50	Do.
		Henry Voorhees	Veedersburg, Ind	50	Do.
		Chairman of the Dubois County Democratic committee.	Jasper, Ind	50	Do.
		J. W. W. Simmon	Spades, Ind	50	Do.
		A. D. Owen, chairman of Posey County Democratic committee.	Mount Vernon, Ind	50	Do.
		C. J. Kerr, chairman of Democratic committee.	Evansville, Ind	50	Do.
		C. R. Faulkner	Holton, Ind	50	Do.

D. H. Lubker, chairman of Jackson County Democratic committee.	Brownstown, Ind	50	Do.
L. M. O. Bannon, chairman of Harrison County Democratic committee.	Corydon, Ind	50	Do.
A. Heinberger, chairman of Floyd County Democratic committee.	New Albany, Ind	50	Do.
Chairman Democratic central committee	Oldenburg, Ind	33	Do.
Hon. Jno. Lamb	Terre Haute, Ind	100	Do.
A. J. Kelly	do	100	Do.
Dudley Weeks	do	100	Do.
Nick Cornet, chairman of Johnson County Democratic committee.	Versailles, Ind	25	Do.
L. E. Westover, chairman of Shelby County Democratic committee.	New Madison, Ind	25	Do.
Jno. F. Geyer	Laurel, Ind	25	Do.
A. J. *Broops*, chairman of Brown Township Democratic committee.	*Cross Plains*, Ind	25	Do.
Ed. W. Wood	Milan, Ind	25	Do.
Calvin Rea	Poston, Ind	25	Do.
Geo. W. Schmidt	Napoleon, Ind	25	Do.
H. J. Behlmer	Sunman, Ind	25	Do.
Chas. Vanosdol	Porter, Ind	25	Do.
Chris. Schriver	Batesville, Ind	25	Do.
Wm. Dansch	Napoleon, Ind	25	Do.
Wm. J. Gray	Elrod, Ind	25	Do.
A. C. Francisco, Center Township Democratic committee.	Osgood, Ind	25	Do.
M. Storem, chairman of Scott County Democratic committee.	Scottsburg, Ind	50	Do.
Hon. D. H. Ellison	Mitchell, Ind	50	Do.
R. L. Coffey	Nashville, Ind	29	May 28, 1896
B. S. *Sutton*	*Shelbyville*, Ind	29	Do.
A. D. Owen	Mount Vernon, Ind	29	Do.
W. W. Kellems	Rockport, Ind	29	Do.
C. J. Kelso	Evansville, Ind	29	Do.
Geo. S. Pleasant	Vevay, Ind	29	Do.
E. W. McIntosh	Bloomfield, Ind	29	Do.
Taylor Thompson	Crawfordsville, Ind	29	Do.
A. M. Yellton	Vincennes, Ind	29	Do.
J. M. Cravens	Madison, Ind	29	Do.
D. H. Lubker	Brownstown, Ind	29	Do.
L. M. O. Bannon	Corydon, Ind	29	Do.
A. Heimburger	New Albany, Ind	29	Do.
Wm. Merrill	Connersville, Ind	29	Do.
A. M. Cunming	Bloomington, Ind	29	Do.
Morton J. Miller, Crawford County central Democratic committee.	Grantsburg, Ind	29	Do.
M. B. *Hottle*	*Salem*, Ind	29	Do.
Mark Storem	Scottsburg, Ind	29	Do.
Geo. W. Pigman	Liberty, Ind	29	Do.
A. S. Hart	Martinsville, Ind	29	Do.
W. J. *Richardson*	Bowman, Ind	29	Do.
C. W. Gray	Osgood, Ind	29	Do.

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
Voorhees, D. W	Indiana	B. Raynor	Jeffersonville, Ind	29	May 28, 1896
		Chairman of the Dubois County Central Democratic Committee.	Jasper, Ind	29	Do.
		Chairman of the Dearborn County Central Democratic Committee.	Lawrenceburg, Ind	29	Do.
		Gurley Taylor, Warrick County Democratic Committee.	Boonville, Ind	29	Do.
		Miss Frank Faulkner	Holton, Ind	16	Do.
		Miscellaneous individuals	Miscellaneously addressed, Indiana	230	Do.
Watson, J. E	do	do	do	859	May 15, 1896
		Hon. Jas. E. Watson	House of Representatives, Washington, D. C	341	Do.
		Geo. O. Cravens	Versailles, Ind	150	Do.
		D. L. Wilbur	Rising Sun, Ind	150	Do.
		Arch. Shaw	Lawrenceburg, Ind	150	Do.
		Lew W. Hill	Aurora, Ind	150	Do.
		A. H. Rockafeller	Brookville, Ind	150	Do.
		John Pattie	Vevay, Ind	150	Do.
		H. R. Lennard	Metamora, Ind	150	Do.
		W. A. Bodine	Morristown, Ind	150	Do.
		J. J. Wingate	Shelbyville, Ind	300	Do.
		Jas. E. Caskey	Greensburg, Ind	300	May 20, 1896
		Miscellaneous individuals	Miscellaneously addressed, Indiana	99	Do.
		do	do	17	May 25, 1896
		Hon. J. E. Watson	Rushville, Ind	983	Do.
Watson, D. K	Ohio	Hon. D. K. Watson	House of Representatives, Washington, D. C	111	May 8, 1896
		Miscellaneous individuals	Miscellaneously addressed, Ohio	2,889	Do.
		Hon. D. K. Watson	The Hamilton, Washington, D. C	1,000	May 28, 1896
Wadsworth, J. W	New York	Miscellaneous individuals	Miscellaneously addressed, New York	3,000	May 18, 1896
		do	do	26	May 20, 1896
		do	do	79	May 28, 1896
		Hon. J. W. Wadsworth	House of Representatives, Washington, D. C	270	Do.
		Master of Grange 740	East Ann, N. Y	50	Do.
		Master of Grange 783	Elba, N. Y	50	Do.
		Master of Grange 178	Dansville, N. Y	50	Do.
		Master of Grange 23	Albion, N. Y	50	Do.
		Master of Grange 428	Avon, N. Y	50	Do.
		Master of Grange 142	Corfu, N. Y	50	Do.
		Master of Grange 163	Bergen, N. Y	50	Do.
		Master of Grange 394	Fort Hill, N. Y	50	Do.
		Master of Grange 395	Byron, N. Y	50	Do.
		Master of Grange 405	Ray, N. Y	50	Do.
		Master of Grange 418	Batavia, N. Y	50	Do.
		Master of Grange 423	Pavilion Center, N. Y	50	Do.
		Master of Grange 748	West Bethany, N. Y	50	Do.

Wathall, E. C	Mississippi	Hon. E. C. Walthall	Maltby Building, Washington, D. C	313	Do.
		Miscellaneous individuals	Miscellaneously addressed, Mississippi	2,072	Do.
		M. Hairston	Oakland, Miss	154	Do.
		J. E. Jenkins	Redding, Miss	154	Do.
		Capt. J. L. Collins	Coffeeville, Miss	154	Do.
		Sam. Nile	Grenada, Miss	153	Do.
Warner, V	Illinois	Hon. V. Warner	The Cairo, Washington, D. C	3,000	May 5, 1896
		Miscellaneous individuals	Miscellaneously addressed, Illinois	400	May 27, 1896
		Miss Mida Yontz, secretary Grange 287	Lexington, Ill	60	Do.
		Miss Ida Yontz, secretary Grange 173	Colfax, Ill	60	Do.
		J. S. Raymond, secretary Grange 502	Sidney, Ill	60	Do.
		L. L. Bell, secretary Grange 835	Holden, Ill	60	Do.
		J. F. Morton, secretary Grange 1142	Heyworth, Ill	60	Do.
		W. M. McConnell, secretary Grange 1163	Leroy, Ill	60	Do.
		Mrs. Cora S. Keady, secretary Grange 1382	Normal, Ill	60	Do.
		Miss C. W. Mosley, secretary Grange 711	Roberts, Ill	60	Do.
		Mrs. Belle Peovy, secretary Grange 820	Bloomington, Ill	60	Do.
		J. L. Weir, secretary Grange 517	Stamford, Ill	60	Do.
Wanger, J. P	Pennsylvania	Hon. J. P. Wanger	228 New Jersey avenue southeast, Washington, D. C	75	May 11, 1896
		Miscellaneous individuals	Miscellaneously addressed, Pennsylvania	2,925	Do.
		do	do	380	May 20, 1896
		do	do	911	May 25, 1896
		Hon. J. P. Wanger	228 New Jersey avenue southeast, Washington, D. C	89	Do.
Warren, F. E	Wyoming	Hon. F. E. Warren	United States Senate, Washington, D. C	119	May 15, 1896
		S. B. Tuttle	Cheyenne, Wyo	75	Do.
		Miscellaneous individuals	Miscellaneously addressed, Wyoming	2,806	Do.
		Hon. F. E. Warren	United States Senate, Washington, D. C	1,000	May 25, 1896
Walsh, J. J	New York	Hon. J. J. Walsh	131 B street southeast, Washington, D. C	3,000	May 19, 1896
		Mrs. J. J. Walsh	31 Oliver street, New York City	500	May 20, 1896
		Miscellaneous individuals	Miscellaneously addressed, New Jersey	12	Do.
		Hon. J. J. Walsh	House of Representatives, Washington, D. C	1,000	May 27, 1896
Walker, J. A	Virginia	Miscellaneous individuals	Miscellaneously addressed, Virginia	1,697	May 8, 1896
		Hon. J. A. Walker	Willard's Hotel, Washington, D. C	1,303	Do.
		do	215 East Capitol street, Washington, D. C	1,000	May 28, 1896
Walker, J. H	Massachusetts	Hon. J. H. Walker	Care Hon. L. T. Herrick, 405 Main street, Worcester, Mass.	3,000	May 16, 1896
		do	do	800	May 27, 1896
		do	House of Representatives, Washington, D. C	200	Do.
Washington, J. E	Tennessee	Hon. J. E. Washington	2013 Hillyer place, Washington, D. C	231	Apr. 24, 1896
		Miscellaneous individuals	Miscellaneously addressed, Tennessee	2,769	Do.
		do	do	1,000	May 25, 1896
Wellington, G. L	Maryland	Hon. G. L. Wellington	Cumberland, Md	3,000	May 11, 1896
		do	do	1,000	May 25, 1896
Wetmore, G. P	Rhode Island	Miscellaneous individuals	Miscellaneously addressed, Rhode Island	1,997	May 18, 1896
		Hon. G. P. Wetmore	Committee on Agriculture, United States Senate, Washington, D. C.	1,003	Do.
		do	Committee on Manufactures, United States Senate, Washington, D. C.	1,000	May 22, 1896
Wheeler, Jos	Alabama	Miscellaneous individuals	Miscellaneously addressed, Alabama	2,739	Apr. 27, 1896
		Hon. Jos. Wheeler	House of Representatives, Washington, D. C	261	Do.
		do	228 New Jersey avenue southeast, Washington, D. C	1,000	May 21, 1896
White, Geo. E	Illinois	Hon. Geo. E. White	Loan and Trust Building, Washington, D. C	3,000	May 5, 1896
		do	House of Representatives, Washington, D. C	1,000	May 28, 1896

Record of seed distribution, showing by whose order seeds were mailed, to whom sent, with the post-office address, etc.—Continued.

Sender.	State of—	To whom sent.	Post-office address.	Number of mail packages.	Date.
White, S. M	California	Hon. S. M. White	Committee on Commerce, United States Senate, Washington, D. C.	192	May 20, 1896
		do	United States Senate, Washington, D. C	1,000	May 22, 1896
		Miscellaneous individuals	Miscellaneously addressed, California	576	May 20, 1896
		The Herald	Los Angeles, Cal	500	Do.
		The Times	do	500	Do.
		Chamber of Commerce	do	500	Do.
Wilson, F. H	New York	Hon. F. H. Wilson	Temple Court, New York City	3,000	May 18, 1896
Wilson, S	South Carolina	Hon. S. Wilson	Care B. B. Bishop, Spartanburg, S. C	3,000	Apr. 23, 1896
		do	Care Barnes & Bishop, Spartanburg, S. C	1,000	May 21, 1896
Willis, J. S	Delaware	Miscellaneous individuals	Miscellaneously addressed, Delaware	3,000	May 11, 1896
		do	do	910	May 25, 1896
		Hon. J. S. Willis	Care J. E. Smithers, 142 C street southeast, Washington, D. C.	90	Do.
Wilber, D. F	New York	Miscellaneous individuals	Miscellaneously addressed, New York	298	May 18, 1896
		Hon. D. F. Wilber	Willard's Hotel, Washington, D. C	2,702	Do.
		do	do	900	May 28, 1896
		Miscellaneous individuals	Miscellaneously addressed, New York	128	Do.
		Hon. D. F. Wilber	Willard's Hotel, Washington, D. C	1,000	June 6, 1896
Williams, J. S	Mississippi	Hon. J. S. Williams	109 First street northeast, Washington, D. C	42	Apr. 24, 1896
		Miscellaneous individuals	Miscellaneously addressed, Mississippi	2,958	Do.
		do	do	2,409	May 20, 1896
		do	do	824	Do.
		do	do	1,000	May 25, 1896
Wilson, J. L	Washington	do	Miscellaneously addressed, Washington	2,600	May 20, 1896
		A. K. Clark	Rockford, Wash	200	Do.
		J. W. Mathews	Waterville, Wash	200	Do.
		Hon. J. L. Wilson	United States Senate, Washington, D. C	100	May 27, 1896
		Klickitat County Agriculturist	Goldendale, Wash	200	Do.
		Vancouver Independent	Vancouver, Wash	200	Do.
		W. J. Nickerson	Plaza, Wash	32	Do.
		Hon. L. H. Curtis	The Dalles, Wash	25	Do.
		J. J. Browne	Spokane, Wash	25	Do.
		Miscellaneous individuals	Miscellaneously addressed, Washington	418	Do.
Wilson, Edgar	Idaho	Hon. Edgar Wilson	1308 R street northwest, Washington, D. C	300	May 19, 1896
		Miscellaneous individuals	Miscellaneously addressed, Idaho	2,700	Do.
		do	do	1,000	May 27, 1896
Wilson, G. W	Ohio	Hon. G. W. Wilson	The Varnum, Washington, D. C	200	May 11, 1896
		do	London, Ohio	223	Do.
		Miscellaneous individuals	Miscellaneously addressed, Ohio	2,577	Do.
		do	do	276	May 28, 1896
Wood, B	Illinois	Hon. B. Wood	Care J. C. Eversman, 407 First street northeast, Washington, D. C.	3,000	May 5, 1896
		do	do	35	May 27, 1896

		Miscellaneous individuals	Miscellaneously addressed, Illinois	771	Do.
		W. J. McAnally	Chrisman, Ill	25	Do.
		Hon. A. G. Trogdan	Paris, Ill	25	Do.
		B. H. Lawson	Petna, Ill	25	Do.
		R. T. Fry	Olney, Ill	50	Do.
Wolcott, E. O	Colorado	Hon. E. O. Wolcott	United States Senate, Washington, D. C	3,000	May 2, 1896
Woodard, F. A	North Carolina	Hon. F. A. Woodard	Metropolitan Hotel, Washington, D. C	3,000	Apr. 27, 1896
		do	do	1,000	May 22, 1896
Woomer, E. M	Pennsylvania	Hon. E. M. Woomer	Lebanon, Pa	474	May 11, 1896
		Miscellaneous individuals	Miscellaneous addresses, Pennsylvania	2,526	Do.
		do	do	1,000	May 27, 1896
		do	do	586	May 28, 1896
Woodman, C. W	Illinois	Hon. C. W. Woodman	Congressional Hotel, Washington, D. C	3,000	May 5, 1896
		do	do	1,000	May 21, 1896
Wright, A. B	Massachusetts	Miscellaneous individuals	Miscellaneously addressed, Massachusetts	2,020	May 20, 1896
		Hon. A. B. Wright	House of Representatives, Washington, D. C	134	Do.
		R. V. Wood	Cheshire, Mass	40	Do.
		Hon. A. Barrus	Goshen, Mass	100	Do.
		W. Barton	Dalton, Mass	125	Do.
		A. D. Hemphill	Holyoke, Mass	150	Do.
		Silas Root	Granville, Mass	16	Do.
		R. Kneil	Westfield, Mass	50	Do.
		J. D. Drew	Greenfield, Mass	50	Do.
		F. H. Wright	Great Barrington, Mass	50	Do.
		S. R. Smith	Beckett, Mass	25	Do.
		J. C. Smith	Sheffield, Mass	25	Do.
		G. B. Waterman	Williamstown, Mass	25	Do.
		F. R. Shaw	Adams, Mass	25	Do.
		D. H. Dower	Cummington, Mass	25	Do.
		Jno. B. Hall	Stockbridge, Mass	25	Do.
		Hugo Maure	Shelburne Falls, Mass	25	Do.
		Thos. B. Post	Lenox, Mass	25	Do.
		The town clerk	Hawley, Mass	25	Do.
		Abner Rice	Lee, Mass	25	Do.
		H. G. Dalzell	South Egremont, Mass	25	Do.
		T. D. Pierce	Greenfield, Mass	100	May 25, 1896
		Miscellaneous individuals	Miscellaneously addressed, Massachusetts	38	Do.

REPORT OF THE CHIEF OF THE DIVISION OF AGRICULTURAL SOILS.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF AGRICULTURAL SOILS,
Washington, D. C., August 29, 1896.

SIR: *I have the honor to submit herewith a report upon the work of* the Division of Agricultural Soils for the fiscal year ending June 30, 1896.

Respectfully,

MILTON WHITNEY,
Chief.

Hon. J. STERLING MORTON,
Secretary.

WORK OF THE YEAR.

The most important lines of work carried on during the current year have been an investigation of methods suitable for use in the study of the physical conditions of soils in the field, under which agricultural crops are grown; a continuation of the study of the texture of soils of some of the important agricultural areas of the country; and a study of the physical conditions of the soils adapted to particular agricultural interests.

A bulletin was prepared with 36 illustrations showing graphically the differences in the texture of soils of some of the most important types of land. This bulletin shows that most of our agricultural crops are adapted to soils of certain texture differing greatly for the various crops. Three bulletins have been issued during the year, showing the daily amount of moisture maintained by a number of these different soils, both with and without crops growing on them, and with different methods of cultivation. These records show a very important difference in the conditions of adjacent soils of different texture and show the reason for the peculiar agricultural value and adaptation to crops of the different soils. For example, the different types and varieties of tobacco are most successfully grown on soils of different texture, which maintain, by reason of their texture, very different amounts of moisture, even under the same rainfall and temperature conditions.

The investigation of the texture of soils has been extended into some of the principal tobacco areas and to the cotton lands of the South,

while records are being kept of the amount of moisture in the different soils.

The influence of thorough cultivation, subsoiling, and irrigation on the moisture content has been further investigated. It has been found this year again that on some soils in the semiarid regions of the West subsoiling, with thorough subsequent cultivation, has had the effect of doubling the amount of moisture in the soil throughout the season. On other soils it has not seemed to have had any marked effect under the conditions which have prevailed.

Our records show very clearly the danger point at which the soils become too dry for crops, and where irrigation is practiced the effect is very apparent in raising the curve representing the moisture content of the soil and maintaining it constantly above this danger line where the method of irrigation has been judiciously applied.

METHODS OF INVESTIGATION.

As explained in previous reports the most important thing in commencing an essentially new line of work is the devising of methods for investigation. A great part of the time of the division has necessarily been given to this work. Very satisfactory progress has been made in perfecting the method of moisture determination through the electrical resistance of soils. Ten instruments have been constructed for this purpose, and seven of them have been placed with competent observers in some of the principal truck, tobacco, wheat, and grass lands in Massachusetts, Connecticut, Pennsylvania, Maryland, North Carolina, Kentucky, and Tennessee. In using these instruments temperature cells and carbon plates are buried in the soil of the field at any desired depth. Any number of them can be connected by wires to a single instrument. These remain throughout the season, and by reading them daily records can be kept of the temperature and of the moisture content at the various depths. These instruments will be tested carefully this season, and certain modifications will be made in the method and probably in the instrument also to adapt them to the practical use in the field.

The electrical resistance of soils depends upon the amount of moisture, the temperature, and the salt content. The temperature effect can be eliminated by the use of temperature cells. The influence of the salt content is more difficult to overcome, and work is being pushed along that line at present. A method is being devised for the determination of the soluble salt content of soils in the field. This method is so extremely sensitive that the variations in the salt content, due to the abstraction of food material by plants, to evaporation and rains, and to the influence of fertilizers, can be sharply determined. These investigations are leading to very interesting results, and the data which are being accumulated throw a very important light upon the constitution of soils and the changes which are constantly going on in them. The method has not yet been so far perfected as to warrant its use in our field investigations, but it is expected that this will very shortly be done.

This whole method for the determination of the moisture, temperature, and soluble salt content of soils, for the determination of the circulation of salt in the soil, and for the determination of the depth to which the rainfall descends will prove of the greatest value, not only in soil investigations but in the practical work of cultivation and irrigation.

ORGANIZATION.

The work of the division is gradually being organized upon the following broad general lines, which will require very close cooperation with the work of other branches of the Department. The work should be based upon and should be an extension of the work of the U. S. Geological Survey. One of the most important objects of the work of the division should be to investigate and map the important soil areas in accordance with their geological relations and their agricultural value. These maps should be of such a character as to show the farmers or prospective settlers the character of the soil and the nature of the crops or the general classes of crops adapted to the several soil formations of different regions. The soils adapted to certain classes of crops should also be thoroughly investigated and mapped so that one could see by consulting the maps the areas adapted to certain classes of tobacco, truck, or horticultural interests. Such work forms an essentially new line of agricultural geology, and requires for its successful prosecution persons trained in the difficult problems of surface geology, and who have a broad appreciation and knowledge of the relation of soils to crops.

A considerable amount of this work has already been done in the division, but it should be greatly extended over a wide range of field conditions with detailed and systematic work in some of the most important agricultural areas of the country.

A second feature of the work of the division should be the examination of the physical character of these different soils to determine the conditions which they maintain for crops, and to see how these conditions should and can be controlled or changed to adapt them to the classes of crops which it is desired to grow. This will include, of course, the investigation of the effects of fertilization, of irrigation, and of methods of cultivation on the soil conditions. As the physical investigations and methods are perfected there will be opportunity for much chemical work, and for this there should be close cooperation between this division and the Division of Chemistry.

In connection with the agricultural geologist who outlines the areas of soil formations, and with the physicist and chemist who determine the conditions existing in the soils and how these conditions may be controlled by methods of cultivation and fertilization, there should be close cooperation with the Division of Vegetable Physiology and Pathology. The vegetable physiologist should interpret through his investigations the value of the soil conditions on the economic production of plants. He should tell more surely than anyone else, through a study of the plant development, how the soil conditions should be changed in order to modify the structure or other properties of the plant to adapt it to any particular use. The development of the plant is, after all, the real measure of the value of soil conditions, and to interpret the results of our investigations of the properties and conditions of soils there must be someone cooperating closely with the division who can understand and appreciate this standard of soil values—the development of crops and plants.

The recommendation made last year by the Chief of the Division of Botany that there should be cooperation in the work of this division with the Division of Botany, proposing to map soil areas in accordance with the distribution of natural vegetation, has the hearty approval, and will receive the cordial cooperation of this division if the matter

can be arranged. This botanical work should supplement the cooperation suggested between this division and the U. S. Geological Survey.

SOIL OBSERVERS.

Considerable difficulty has been experienced in securing competent observers located in the typical soil areas which it is desired to study. It is very desirable, in order to avoid duplication of instruments, that the soil observations made for this division should be taken near the observing stations of the Weather Bureau, so that the ordinary meteorological data will be available for use with the underground conditions recorded by the observers of this division. The statutes specifically prohibit the payment of an additional salary to an employee of the Government for additional work performed for the Department of Agriculture. While the Weather Bureau rainfall and cotton region observers receive only from 10 to 25 cents for each daily observation, and while they would only receive from 10 to 25 cents for each daily observation from this division, it has been impossible, on account of this statute, to have the same persons perform services for the Weather Bureau and for this division at the same time. Attention is respectfully called to the fact that the work of the Statistical Division, the Weather Bureau, and of this division could often be very advantageously performed by the same person. A person keeping a close observation of the temperature and rainfall would be better able to study soil conditions, and a person performing both services would be better able to appreciate crop conditions. As the observational work of the Department is increased and extended such a combination of work is likely to be more and more frequently demanded, and it is respectfully recommended that Congress be asked to allow additional salary for additional work to a person whose place of private business or residence is conveniently located for the performance of certain duties, and where the performance of the duties involves but a small portion of the time and attention, thus permitting him to pursue other regular lines of employment, and where the total compensation of the person does not exceed $400 or $500 per annum.

REPORT OF THE CHIEF OF THE WEATHER BUREAU.

U. S. DEPARTMENT OF AGRICULTURE,
WEATHER BUREAU,
Washington, D. C., September 20, 1896.

SIR: I have the honor to submit a report of the operations of the Weather Bureau during the year ended June 30, 1896.

Respectfully,

WILLIS L. MOORE,
Chief of Bureau.

Hon. J. STERLING MORTON,
Secretary.

PRINCIPAL DUTIES OF THE BUREAU.

The foremost duties of the Weather Bureau are briefly summarized in the following:

To collect twice daily, by telegraph, meteorological observations made at about one hundred and fifty stations advantageously situated throughout the United States; to forecast the coming weather from the charted meteorological conditions, as shown by these observations; to disseminate immediately and as widely as possible the forecasts and special warnings thus made; to issue danger warnings to mariners on the seaboard and Great Lakes whenever impending storms threaten the destruction of life and property; to collect twice daily, by telegraph, at certain river centers, reports of rainfall over watersheds, and water stages in the main rivers and their tributaries; to deduce therefrom, for the benefit of commerce and navigation, forecasts of height of water and warnings of impending floods; to collect and publish at designated State centers, in State bulletins, weekly reports of crop conditions; to issue, weekly, national climate and crop bulletins, showing by text and charts the effect during the preceding week of weather conditions on the growing crops of the country; to collect, monthly, by mail, temperature and rainfall observations made daily with about 3,000 sets of standard instruments distributed throughout the country, and to collate and publish the same in order that the climatic features of the different parts of the United States may be accurately defined.

ECONOMICAL EXPENDITURES.

Notwithstanding the rapid extension of the work of the Weather Bureau, the advancement given to old and deserving observers, and the improvements made in old methods, as shown in detail in the following pages, the expenditures were less than during any year of the

last fifteen, except one, and in that one, although the distribution of forecasts and the beneficial results attained were much less than during the year just ended, the expense was substantially the same.

FORECASTS AND WARNINGS.

Special care has been exercised at all times in assigning officials to the important duty of making weather forecasts, and it is gratifying to report that the forecasts have attained a high standard of accuracy, whether we measure them by the official markings, by the comments of the press, or by the testimony of those whose interests are greatly affected by a foreknowledge of the weather. The average percentage of verifications of forecasts during the year was 82.4 per cent, an improvement of 2.4 per cent over that of the previous year. It should be stated, however, that no system of markings will fully determine the comparative value of weather forecasts. Occasionally there are times when the meteorological conditions during the twenty-four to thirty-six hours covered by the forecasts change so rapidly and to such a marked degree that neither the changes nor the sequence in which they happen can be foretold with even a fair degree of accuracy. Doubtless much of the criticism of the forecasts which has been made at times results from the fact that our officials have claimed, and probably the public has expected, more than science is able to do. The defects of a system should be as well understood as its possibilities. In the great majority of cases, however, the atmospheric conditions are such that it is possible to make forecasts and issue danger warnings that are not only almost certain of full verification, but also of incalculable benefit to the marine, agricultural, and commercial interests of the country if properly disseminated.

In a great measure the merits of a forecaster are determined by his ability quickly to comprehend the meaning of the charted meteorological data, to discern a portentous condition when it appears, and to confidently yet conservatively issue warnings to the many property and industrial interests concerned. It is believed that the methods of discipline which have been instituted and the assignments of officials which have been made are such as will reduce to a minimum the liability of storms dangerous to mariners reaching sea or lake ports vithout being heralded by storm signals, or of the rivers in the fruitul central valleys reaching the danger line without due notice having een given to shippers and to residents of lowlands contiguous thereto, r of cold waves of any considerable extent sweeping eastward unanounced to those interested in interior commerce.

Three West Indian hurricanes swept the Atlantic coast line from orida to New England, and two passed northward offshore, but ar enough to the coast line to seriously endanger craft about to leave rt. Danger signals were displayed at all ports well in advance of e storms, and as a result no lives were lost and but little property stroyed. Not many years ago, before the Weather Bureau system s fully and efficiently developed, one of these terrific tropical storms ght have damaged and destroyed shipping to the extent of several llions of dollars, and hundreds of precious lives might have been crificed. To-day, although these storms sweep our Gulf and Atlantic sts with all their wonted fury, and storms of somewhat less force ss our Great Lakes from the West, it is seldom that the country is cked by the news of a great marine disaster.

The forecasts for the territory east of the Rocky Mountains were

issued from the central office, except that in the morning the forecasts for Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Nebraska, North and South Dakota, Montana, Wyoming, and Colorado were issued exclusively by the Weather Bureau office in Chicago.

The forecasts for California, Arizona, Nevada, and Utah were issued by the Weather Bureau office in San Francisco, and those for Oregon, Washington, and Idaho by the Weather Bureau office in Portland, Oreg.

Marine storm warnings were telegraphed to the lake and seacoast stations and to the director of the Canadian meteorological service at Toronto; warnings of frosts to fruit, cranberry, tobacco, cotton, and sugar regions, and warnings of severe local storms, cold waves, northers, and dangerous floods to the threatened regions.

Local forecasts of weather, temperature, and in some instances of wind (for the station and vicinity) were issued at 66 stations other than the district forecast centers above named.

COLD WAVE AND FROST WARNINGS.

The great value of these warnings to the general welfare and comfort of the people of the country at large has been manifested during the past year. No cold wave or frost of unusual intensity has occurred without ample forewarning, and there are numerous specific instances of record where these warnings have resulted in saving from destruction thousands of dollars' worth of property.

Particular attention is called to the cold wave of unusual severity that overspread nearly the entire United States east of the Rocky Mountains on January 2–5, 1896. Warnings of this wave were sent at least twenty-four hours in advance to nearly every station in its path. The Weather Bureau observers, at the stations visited by the cold wave, report an estimated saving on account of the warnings of over $3,500,000. This estimate, from the nature of the case, could be a partial one only. The total value of property saved must seem almost incredible to one who has given but little thought to the vast extent of territory often swept by one of these large bodies of cold air. It is interesting to note the variety of industries benefited. Owners and shippers of perishable produce protected their property from injury by frosts or freezing. Owners of residences, factories, and distilleries, and custodians of hospitals and public buildings protected water pipes to prevent bursting. Railroad officials regulated the size of trains. Florists and truck growers protected their hothouses and growing crops. Owners of skating rinks and ice harvesters saw that the water was in the best condition for freezing. Farmers in the South slaughtered their cattle and hogs. River men protected their boats, and stock raisers their cattle. In the State of Florida, alone, where a large quantity of early garden truck was above ground, the actual figures given by the truck raisers themselves showed a saving by this warning of over $300,000, and this was necessarily only a partial estimate.

A pamphlet prepared by Mr. W. H. Hammon, forecast official, Weather Bureau at San Francisco, suggesting new methods for protecting fruit trees and growing crops from injury by frost was published by the Bureau and extensively circulated in the fruit districts of California. During the severe frosts that visited that region in the spring of this year, and of which ample warnings were given, these methods of protection were tried and found quite successful, the savings being estimated at several millions of dollars.

Warnings of frosts in the early spring to the truck growers in the Gulf and South Atlantic States resulted, as shown by reports of our observers, in savings aggregating hundreds of thousands of dollars.

The local forecast official at Galveston, Tex., is authorized to make and distribute special forecasts when frost or freezing weather is anticipated in the sugar and truck-growing region in the vicinity of that city. During the past winter every dangerous temperature in this region was forecast. Many acknowledgments of the benefits derived from these warnings were received; the savings were very large, aggregating upward of $100,000.

Another marked instance of the direct pecuniary value of weather forecasts occurred in connection with the raisin crop of California, an industry representing an immense sum and quite liable to serious damage if not protected from rain during the drying season. The Weather Bureau forecasts of rain for the raisin districts during last season were successful, no rain having fallen without warning, and no unnecessary warnings having been issued. The Weather Bureau observer at Fresno, Cal., under date of November 8, 1895, reports that "of the 30,000 tons of raisins cured in the sun thus far not a single pound has been reported damaged by rain."

SEVERE LOCAL STORMS AND TORNADOES.

A large number of destructive local storms occurred during the spring in the lower Missouri and central Mississippi valleys. These storms generally were predicted in the morning forecast in the terms, "conditions are favorable for severe local storms," or "severe local thunderstorms."

MARINE STORM WARNINGS.

Timely warnings of all severe storms likely to cause injury to shipping were sent to our maritime stations and resulted in almost incalculable benefit. In the harbor of Buffalo alone during six of the most severe storms of the past winter a total of over 150 vessels, aggregating in value upward of $17,000,000 and having on board about 1,800 persons, were detained in port by reason of the Weather Bureau warnings. During the unusually severe and long-continued northeast storm on the New England coast of December 11-13, 1895, 37 vessels, including 7 large steamships, valued with their cargoes at about $2,000,000 and having on board 500 persons, were detained in the port of Boston by the warnings, and probably a large percentage saved from destruction. During the severe storm of February 5-7, 1896, at Charleston, S. C., 22 vessels, valued at $95,000, remained in port two days as a result of the warnings.

The hurricane signal recently adopted by the Bureau as a warning of tropical hurricanes and of extremely severe and dangerous storms was displayed on five occasions during the year, twice on the South Atlantic coast for approaching hurricanes during the fall of 1895 and three times for dangerous storms on the Middle Atlantic and New England coasts during the spring of 1896. This signal calls for a widely extended display; extraordinary efforts were made to disseminate the warnings thoroughly, and on each occasion when it was displayed it was of great benefit to the interests affected. Many expressions of commendation were received after the passage of the tropical hurricane that moved from south of Cuba northeastward between the Bahamas

and the Florida coast to the Bermudas, October 18-24, 1895. About 120 vessels, varying in size from a fishing smack to an ocean steamer, and valued with their cargoes at upward of a million dollars, remained in port on our Southern coasts as a result of the warnings sent out. Twelve seagoing vessels were detained in port at Nassau, New Providence, by the warnings that were telegraphed the authorities there by the Weather Bureau. The records of the stations near which the hurricane passed show it to have been one of great violence, velocities of 55 miles an hour being reported from Jupiter and Key West and 80 miles at Habana. Exceptionally high tides occurred on the South Atlantic coast. It is probable that if these vessels had gone out a large number of them would have been exposed to the fury of the storm with a possibility of total loss or serious damage. Two instances are also cited where the Bureau was able to be of assistance to stranded vessels, viz, on March 19, 1896, in the case of the steamer *Craigmore*, which stranded on the Florida coast, 8 miles south of Jupiter. The observer at Jupiter opened communication with the vessel and established a temporary telegraph station on the shore, and thus was able to summon assistance. The American liner *St. Paul*, valued at several million dollars, stranded near Long Branch about February 2, 1896. Information of anticipated favorable winds was given and materially aided in floating the steamer.

OPINION OF THE MARITIME ASSOCIATION OF THE PORT OF NEW YORK AS TO THE VALUE OF STORM WARNINGS.

Mr. F. W. Houghton, superintendent of the Maritime Association of the Port of New York, by letter of September 5, 1896, speaks of the enormous tonnage that annually leaves our Atlantic ports and of the great value of the Weather Bureau storm warnings. He states, in part, as follows:

To fix with any degree of accuracy their money value is, of course, impossible. The damage caused by a storm might with much labor be reduced to figures, but not the amount saved by timely warning. Data are lacking to make more than an approximate estimate.

Your warnings of the approach of storms obviously are useful chiefly to craft outward bound. Their number, tonnage, and value are estimated as follows:

In the year ending June 30, 1895, there cleared for foreign countries, at the various ports of the Atlantic Coast, from Maine to Florida, the following vessels:

Kind.	Number.	Tonnage.
Steam	5,622	10,076,148
Sailing	5,848	2,105,688
Total	11,470	12,181,836

Value of vessels reported at each clearance (estimated)	$1,060,257,000
Cargoes of merchandise	590,392,743
Specie and bullion	95,626,064
Aggregate	1,746,275,807

The value of the coastwise commerce of the Atlantic Coast for the same period is more difficult to arrive at. In the absence of official data, it can only be judged of proportionately. The only figures we have actually obtainable regarding it are the number and class of vessels arriving annually at the port of New York, and the number and tonnage of craft owned on the Atlantic Coast.

From these the following is estimated as the vessels of over 100 tons which cleared coastwise from Atlantic ports during the year, viz, 17,228 sailing vessels

of 8,407,156 tons, and 3,439 steamers of 2,355,639 tons. At a minimum it is safe to estimate their value, including their cargoes, at $660,998,700. This added to the estimated foreign commerce, $1,746,275,807, makes an aggregate of 32,137 sailings, and 22,944,631 tons, valued at $2,407,274,507, or more than $6,500,000 a day.

This is not evenly divided along the coast, about 54 per cent of the outward ocean commerce of Atlantic ports being dispatched at New York.

Your warnings, therefore, are probably of value to a greater number here than elsewhere. Navigators, however, do not always heed them, but are governed largely by their own judgment of local indications. Those indications are not always apparent at this port, owing probably to its peculiar situation, at an angle with the coast, say 120 miles inside the Gulf Stream, where the axis of tropical storms curves offshore, leaving comparatively slight disturbance here.

The large regular-line steamships, built to withstand the heaviest weather, and the time when mails are on board being counted by minutes, sail in all weathers, excepting only the most extraordinary storms.

These facts may reduce the number of instances in which your warnings are availed of, yet there can be no question as to their great usefulness. If only one in a hundred of the ships were saved from extraordinary damage, it would many times exceed the annual appropriation for your valuable operations. General appreciation of your work is especially shown by the frequent inquiries made of us by captains going to sea regarding your predictions.

WIND-SIGNAL DISPLAY STATIONS.

Many persons are willing to display the signals without compensation other than the benefits that accrue to local interests by the display. Seventeen wind-signal display stations were established during the past year, at fourteen of which the displaymen serve without pay. There are in operation at present 173 wind-signal display stations, 109 of which are in charge of paid displaymen. In addition to the above, 135 stations, 32 Government vessels, and 30 lines of steamers display hurricane signals alone.

TROPICAL HURRICANE REPORTING STATIONS.

Daily observations were taken from July 15 to October 15, 1895, at Kingston, Santiago de Cuba, and St. Thomas, by paid observers of the Weather Bureau, and arrangements were made with Mr. Felix Gomez Merdicuti, of Merida, Yucatan, to report threatening conditions by telegraph. Such conditions obtained but twice during the season, but reports of these were of great value. The same arrangement is in effect during the current year.

RIVER FORECASTS AND FLOOD WARNINGS.

The special work of the Weather Bureau in connection with the rivers of the country is to facilitate commerce on navigable streams by publishing information daily as to water stages along the course of each river, and to issue timely warnings of floods so as to effect the saving of life and property.

As yet the rules of flood forecasting are largely empirical. The official in charge of a river center is familiar with the main river and its tributaries, the area and topography of the catchment basin, the frequency and intensity of the rainfall—especially the intensity—the average time of passage of flood crests between one station and another, and the history of past rises. A knowledge of low-water conditions, especially where bars and shoals exist, is perhaps of equally great importance as a knowledge of high water.

The official in charge of a river center is expected, with the data at his command, to give information to those interested in navigation,

during low or medium stages of water, that will be of great pecuniary value; but his chief and foremost duty is the dissemination of warnings when floods threaten.

The volume of water passing a station in a given time is known only at a few places, and varies, of course, with high and low water. Nor can simple rules be based upon the rainfall, as the absorptive condition of the soil is not constant and the distribution of precipitation over the drainage area is not always determinable.

The principal rivers concerned in the Weather Bureau system are the Allegheny, Monongahela, Ohio, Kanawha, Wabash, Illinois, Tennessee, Cumberland, Mississippi, Missouri, Arkansas, and Red rivers, of the central valleys; the Columbia, Sacramento, and San Joaquin, of the Pacific Coast, and the Hudson, Susquehanna, Potomac, Savannah, Chattahoochee, and Alabama rivers, of the Atlantic and East Gulf coasts.

Each forecaster in charge of a river center has a definite section of the river system of his district assigned to him. He receives the necessary telegraphic reports of rainfall over the tributaries to his river district, and also the necessary telegraphic data as to gauge readings nearer the source of the main river than his own station, and the gauge readings of many of the tributary streams.

Some idea of the vast destruction of property due to floods may be gathered from the statement that the floods of the spring of 1881 and 1882 caused a loss of not less than $15,000,000 to the property interests of the Ohio and Mississippi valleys. It may also be noted that the flood of the spring of 1882 caused a loss of 138 lives in the region from Cairo southward to New Orleans. The flood of 1884, in the region about Cincinnati, caused an estimated loss of over $10,000,000.

In the spring of 1890 the Lower Mississippi Valley was flooded for a distance of 40 miles back from the river in the States of Louisiana, Arkansas, Mississippi, and Missouri. Special warnings, which were amply confirmed by subsequent stages of the water, were issued from Washington in advance of the flood, and, in several cases, far in advance of the flood crest.

Instances are numerous showing the vast utility from a commercial standpoint of a thoroughly equipped Government flood-warning system, notwithstanding the fact that the forecasts are based partly upon empirical reasoning and are, therefore, subject to some error.

The past year has not been marked by any disastrous floods. The sudden melting of snow at the head waters of the Allegheny caused a moderate flood in the Ohio during the latter part of March and beginning of April. Ample warnings were issued by our river officials, and, from reports received, not less than $75,000 worth of property was saved thereby. At the same time the Tennessee reached a flood stage from heavy mountain rains. Of this rise also full warning was given, which resulted in a considerable saving. Early in July there were unusually heavy rains in the South and Middle Atlantic States, which caused floods in the Carolina, Virginia, and West Virginia rivers. The saving in stock, crops, and merchandise in the South Carolina lowlands was reported as $165,000, while preparations were made, upon receipt of flood warnings, to raft out some $3,000,000 worth of logs, which was subsequently done. It is evident that, even in a year unusually free from floods, the slight expense of the system of river forecasts and flood warnings is many times repaid by the saving of exposed property.

THE DISTRIBUTION OF DAILY FORECASTS AND COLD-WAVE, FROST, STORM, RAIN, AND EMERGENCY WARNINGS.

More than 1,000 places have been added each month to the forecast distribution lists during the year. Many villages and out-of-the-way places not having communication with the large towns by means of the telegraph or telephone are now supplied with weather forecasts by means of the logotype cards. The extension of the logotype card system has not only resulted in a gratifying increase in the number of places receiving the daily forecasts, but also materially reduced the expense of a paid telegraph service. At the close of the year the number of stations receiving forecasts by telegraph at Government expense was 339 less than at the date of last report; the number receiving daily forecasts by mail without expense to the Government was 10,910 greater.

As a means of securing more prompt and satisfactory service the distribution of emergency warnings was placed under the supervision of officials at regular telegraphic centers in July, 1895.

The distribution of forecasts to the Executive Departments and the more prominent business houses of Washington, D. C., was begun during August of 1895, and continued throughout the year.

In January, 1896, the telegraphic distribution of forecasts and special warnings for the fifteen Northwest States, prepared by Prof. E. B. Garriott at Chicago, was transferred from the distributing centers to the Chicago station. As a result of the change and the admirable system of distribution originated by Professor Garriott, the forecasts are now received at display stations and mail-distributing centers from forty-five to fifty minutes earlier than by the old system of distribution.

Arrangements with the managers of local telephone companies at a number of our larger Weather Bureau stations have been perfected whereby special cold-wave and storm warnings are given the widest possible distribution. Nearly 44,000 telephone subscribers have been listed thus far to receive warnings of this character. Nearly 1,400 public schools are furnished with the daily forecasts by the logotype card system alone. In some instances, in addition to being posted in the corridors of the school buildings, the forecasts are read to the pupils by the teachers each day before the schools are dismissed.

While every effort has been made to extend the distribution of forecasts in every possible way, more attention has been given to mail distribution by the logotype card system than by any other means. Considering the small expense attached to the method and the small amount of labor required to give satisfactory results, it is believed to be the best plan for disseminating forecasts in rural communities yet devised.

The display of weather signals on the New Orleans, Fort Jackson and Grand Isle Railroad, a line passing through a rich agricultural section, was undertaken during the year. The results are encouraging, although the general display of weather signals from railway trains does not promise well, owing to serious difficulties for which there seems to be no remedy. A rapidly moving train will often pass over the entire section covered by a single forecast within an hour, and while a system could be devised that would provide against many of the emergencies likely to arise, it would be useless by reason of its complexity.

During the past winter the sounding of cold-wave and frost-warning signals by means of locomotive whistles was begun by the Florida

Central and Peninsular Railroad, and the system used with good effect on several occasions.

The statement below shows the number of places in each State and Territory receiving forecasts and special warnings by the various methods of distribution, as well as the increase over last year:

States and Territories.	By telegraph or telephone, at Government expense.				Without expense to the United States, by—			
	Daily forecasts.	Cold-wave warnings.	Frost warnings.	Emergency warnings.	Mail.	Telegraph or telephone.	Railroad telegraph.	Railroad train service.
Alabama	20			63	332	6	38	12
Arizona	2							
Arkansas	30	4		58	259	22	7	
California	5	1	2	3	432	76	378	
Colorado	11	8		47	242	7	4	
Connecticut	11	3	3	32	454	48	15	151
Delaware	4			6	30		21	
District of Columbia					1,029	17		
Florida	35	39	2	52	337	1	26	
Georgia	48	36	1	82	222	2	138	41
Idaho	3				46	1		
Illinois	64	22	2	383	910	45	347	459
Indiana	83	2		98	468	1	322	284
Indian Territory	7	1			72	1		
Iowa	103	4		183	800	14	11	
Kansas	35	3		142	370	29	113	3
Kentucky	43	2	42	76	588	28	26	
Louisiana	28	9	14	6	208	14	3	
Maine	24	1		13	651	8	17	77
Maryland	21		2	17	503	33	79	10
Massachusetts	20	1	16	32	408	22		332
Michigan	68	16		167	1,137	18	319	5
Minnesota	45	7	4	87	472	42		
Mississippi	30	13	3	62	190	39	63	
Missouri	77	6		191	1,599	67	104	60
Montana	14			16	32	4		
Nebraska	64	4		147	461	2	11	
Nevada	2				10	1		
New Hampshire	10			13	247		9	31
New Jersey	24	8	19	70	681	52	150	
New Mexico	5				24	3	2	
New York	98	20	5	201	1,872	206	235	161
North Carolina	52	5	9	114	491	17	1	16
North Dakota	15	12		96	5	26		
Ohio	107	33	81	197	2,039	79	83	17
Oklahoma	2	1		8	35			
Oregon	18				272	9		104
Pennsylvania	59	12	1	105	938	365	765	7
Rhode Island	3			5	14			27
South Carolina	49	4		65	261	62	45	10
South Dakota	31	26		76	249	11		
Tennessee	22	16		93	470	45	29	2
Texas	51	21	10	184	495	133	64	
Utah	7				47	8	10	
Vermont	11	1		16	490	6	11	4
Virginia	34	4	7	91	518	81	56	93
Washington	24		2		106	4		29
West Virginia	16	9	1	44	243	28	48	
Wisconsin	44	13	1	134	879	26		11
Wyoming	2	5		6	4	3		
Total	1,581	371	227	3,481	22,642	1,712	3,550	1,939
June 30, 1895	1,920	198	419	3,494	11,732	1,239	2,346	1,218
Increase		173			10,910	473	1,204	721
Decrease	339		192	13				

Grand totals:	
June 30, 1896	35,503
June 30, 1895	22,566
Total increase, past year	12,937

CLIMATE AND CROP SERVICE.

The work of the Climate and Crop Division (formerly the State Weather Service Division), the general character of which has been

outlined in the annual reports of previous years, was continued during the year practically without change.

The designation "State Weather Service" as applied to the majority of the local meteorological services, being inappropriate to the character of the work performed by these services, the term "State sections of the climate and crop service of the Weather Bureau" was substituted in all cases where the local service was wholly supported by the Weather Bureau. In making this change it was also desired to emphasize the difference between the terms "climate" and "weather." The titles of the weekly and monthly publications of the various climate and crop services, both at the central office and at outlying centers, were also changed. The former designation, State weather service, is retained by the few States in which legislative enactments have been considered such as not to warrant the adoption of a more suitable designation. In some States, however, where the local services are supported by State appropriations, the titles were changed in accordance with the suggestions of the Chief of Bureau.

The great desideratum of local climate and crop services is uniformity of style and matter in their monthly publications. The subject has been discussed at several conventions of the American Association of State Weather Services, but no satisfactory conclusion has been reached. Since the organization of local climate and crop services their results have been published in a variety of sizes and forms, some quarto, some octavo, some as periodicals containing advertisements and conducted as private enterprises, and still others by one of the many duplicating processes. The monthly bulletins were issued as a private enterprise only as a last resort, and, in some instances, at a considerable personal loss to the Weather Bureau official in charge. As a direct result of the equipment of the more important stations with small plants for the printing of daily weather maps it will be possible eventually to publish all of the section climate and crop bulletins in a uniform and attractive style. The size of bulletin best adapted for general use, arrangment of data, construction of charts, and other details were given the careful personal attention of the Chief of Bureau. The bulletin finally adopted is an 8-page quarto, and the first issue under the new process was that of the New England section for March, 1896. The Pennsylvania section was next equipped with printing facilities, and at the close of the fiscal year the Illinois, Ohio, Wisconsin, Tennessee, and Louisiana sections had also been provided with the necessary printing plants. At this writing provision has been made for the equipment of 18 of the 42 climate and crop sections with printing facilities. It is intended that all sections shall be similarly equipped. When this has been done a set of bulletins for a given month will be uniform both as to size and matter, convenient for reference, and easily filed. The equipment of all climate and crop sections with printing plants will enable the officials in charge to issue their bulletins at an earlier date, as well as relieve a number of them of the annoying and embarrassing features involved in conducting a private journal.

CLIMATE AND CROP BULLETINS.

The publication of the National Climate and Crop Bulletin and the weekly bulletins of the various climate and crop services throughout the country met with the same high appreciation noted in former years. It was necessary to increase the edition of the National Bulletin 68 per cent in order to meet the demands for this publication.

There was also a corresponding increase in the editions of the section bulletins. But while the circulation of the State and national bulletins has largely increased, the press is relied upon as the chief means of conveying the information they contain to the public.

The climate and crop service of the Weather Bureau furnishes the public from week to week with trustworthy information concerning climate and crop conditions. Reports from 8,000 special correspondents concerning the effects of the weather upon crops are summarized by experts at State centers and studied in connection with the prevailing weather conditions. The information thus obtained is often the means of correcting erroneous impressions that have been created by the circulation of false reports. The rainfall and temperature conditions have been charted with greater precision than heretofore as a consequence of the increased number of reports made available by the organization of a corn and wheat service. A file of the weekly bulletins for each State forms a most thorough and complete history of the climate and crop conditions of the year.

COTTON, SUGAR, AND RICE SERVICE.

A very decided improvement was made in the service conducted for the benefit of the cotton, sugar, and rice interests by changing the hour of observation from 6 p. m. to 8 a. m., seventy-fifth meridian time. This change went into effect September 1, 1895, since which date the daily bulletins for the 24-hour period ending with the time of observation have been issued soon after 8 a. m. As a rule they now reach the public nearly as early as when issued in the evening, and since they contain later information by twelve hours the value of the bulletins is greatly enhanced.

CORN AND WHEAT SERVICE.

The great value of the system of observations and reports conducted for the benefit of the cotton, sugar, and rice interests led to the recommendation of an appropriation for the maintenance of a similar system covering the principal corn and wheat producing States of the central valleys and the Northwest. The appropriation for this service was made as recommended and the new service was duly inaugurated. The region covered embraces the States north of the Ohio and Missouri rivers, Kentucky, southern Missouri, Kansas, and Nebraska. There are 131 substations which report the rainfall and temperature of the growing fields to a district center each morning. The substations are grouped under nine district centers, as follows: Chicago, Ill., 22; Columbus, Ohio, 14; Des Moines, Iowa, 13; Indianapolis, Ind., 10; Kansas City, Mo., 15; Louisville, Ky., 16; Minneapolis, Minn., 19; Omaha, Nebr., 12; St. Louis, Mo., 10.

The corn and wheat service has proved one of the most popular and useful features added to the work of the Weather Bureau in recent years.

SNOW AND ICE CHARTS.

A chart showing graphically, and by means of text and tables, the depth of snow on the ground at 8 p. m. of the preceding day is published each Tuesday from December to March. The thickness of ice in rivers and harbors is also shown in the tables. The interest manifested in these charts continues as in former years, and the mailing

list has been increased considerably. The influence of a covering of snow upon winter wheat is such as to render these charts a source of useful information, and the ice data given are of considerable importance to lake marine interests. During the early spring especial attention is devoted to the collection and publication of information relative to the ice on the Great Lakes. The ice reports are not as satisfactory as might be desired, owing to difficulties in securing measurements at some stations, but notwithstanding the defects of the present system it serves a useful purpose.

MONTHLY WEATHER REVIEW.

The Monthly Weather Review has become the principal medium of communication between the meteorologists and observers of this country, and by reason of its large circulation it has become a desirable journal for the publication of everything bearing on meteorology and its applications. That section of the text entitled "Special contributions" has, therefore, increased in extent and interest, and is, of course, open to receive communications from all observers and colaborers. The Review fills an important place as a means of popular education. The climatological tables have received wide recognition as one of the most valuable publications of current data. In general, our Review compares well with those published by other Governments, including that published by the Government of India, whose meteorological office has devoted much attention to the practical work of long-range, seasonal forecasts. This latter subject also has received special notice from time to time in our Monthly Weather Review, in hopes that seasonal forecasts will eventually become practicable for the United States notwithstanding the great vicissitudes of our climate. The popular but erroneous idea that these irregularities constitute permanent changes in local climates, due to such local matters as the clearing of forests, the cultivation and drainage of the ground, the planting of trees, and other marks of the progress of civilization, has been combated on several occasions in the "Notes by the editor," in the hope that the attention of the public may be more strongly directed toward the true explanation of the irregularities in daily weather and seasonal climates.

CLIMATE AND HEALTH.

The purpose for which Climate and Health was designed was stated in the introduction to the first number of the publication to be "to collect the meteorologic and hygienic statistics that might be considered by sanitarians and medical climatologists of the greatest correlative importance, and to publish them in the forms most acceptable and useful to those professions, that from its pages all persons interested in the influence of climate and weather upon health might obtain the data for making comparisons of the relative therapeutic and hygienic merits of different climates, and for the prosecution of such original researches and studies as they might find the data suitable for." With the issuance of the March number the publication of the periodical was suspended indefinitely, owing to a change in the appropriation bill for the current year, and the consequent uncertainty as to the existence of authority needed for its continuance. Altogether nine numbers, having a total of 266 pages of text and statistical tables and about 80 pages of charts, were issued. The average edition was about 1,900 copies.

Although the publication was in every detail experimental, and occupied a field which had been relegated by recent changes in medical thought more or less to the background, yet Climate and Health met with fair consideration from the medical and scientific professions.

The time necessarily consumed in the preparation of the various statistical tables, charts, and editorial matter published in Climate and Health precluded the making of any considerable progress in studying the different statistics with a view of determining the correlation of the hygienic and meteorologic states. This line of work will be pursued during the current fiscal year, and if knowledge is acquired which is thought may be useful to the medical profession or to others it will be published in the form of special bulletins.

TELEGRAPH SERVICE.

The aggregate length of the seacoast telegraph lines operated by the Weather Bureau remains the same as at the date of last report, viz, 485 miles, divided into seven separate and distinct sections, each in charge of a chief operator. Three of these, namely, the Hatteras section (161 miles), the Block Island section (29 miles), and the Nantucket section (98 miles) are on the Atlantic Coast. The Alpena section (31 miles) connects Alpena, Mich., with Middle and Thunder Bay islands, in Lake Huron. The remaining three sections are on the Pacific Coast and are known as the Tatoosh Island section (80 miles), the Fort Canby section (28 miles), and the Point Reyes section (58 miles), respectively. In addition to these sections, a telephone line of 2 miles serves for the transmission of wind-signal orders from Huron City to Point Aux Barques, Mich.

The several sections were maintained in very good condition except in two instances, when breaks in submarine cables interrupted communication for a time.

The British steamer *Cambay* went ashore at False Cape, Virginia, at 9 a. m. of October 15, 1895. The chief operator at Cape Henry summoned assistance from Norfolk immediately, and the vessel was released from her dangerous position by 1.30 p. m. of the same day.

The telephone lines and submarine cables from Alpena, Mich., to Middle and Thunder Bay islands, in Lake Huron, were operated throughout the year without interruption. Their maintenance is chiefly of value as a means of conveying danger warnings to vessels passing those islands or seeking shelter there during severe weather. On September 29, 1895, assistance was procured for the disabled steamer *Keystone*, of Cleveland, coal laden. No commercial (paid) business is accepted on this section.

The line from Port Angeles to Tatoosh Island, Washington, passing mostly over an exceedingly rough and densely wooded country, without either wagon roads or bridle paths, is the most difficult and expensive to maintain and also one of the most important to maritime interests. Six intermediate repair stations have to be maintained in the course of the line. This line is also chiefly valuable in reporting inward and outward bound vessels, summoning aid in times of distress, and displaying storm signals. The number of vessels reported each year is shown below:

1891-92	1,080
1892-93	1,383
1893-94	1,862
1894-95	2,245
1895-96	1,891

Another line of value to the shipping interests of the Pacific Coast is that from Astoria, Oreg., to Fort Canby, Wash.; the latter station reports all vessels entering or leaving the mouth of the Columbia River, and also the condition of the bar at stated intervals each day. On August 21, 1895, the Weather Bureau operator at Fort Canby observed the American ship *Drummond*, from Astoria to Liverpool, flying signals of distress and drifting ashore near Tillamook Head. He immediately telegraphed for assistance and the vessel was safely towed out to sea.

The third section of the Pacific Coast, built under special act of Congress, is that from San Francisco to Point Reyes Light, California. Vessel and weather reports, wreck messages, and other maritime information from Point Reyes, all highly appreciated in shipping circles, justify the comparatively small expense involved in maintaining this section. This line carries no paid business.

The following statement shows the amount of tolls collected and covered into the Treasury on account of commercial (paid) messages passing over the seacoast lines:

Nantucket section	$2,674.11
Block Island section	708.09
Hatteras section	315.24
Fort Canby section	517.94
Tatoosh Island section	143.02
Total	4,358.40

In addition to the Government tolls proper, $4,330.72 was collected by the operators on account of connecting commercial lines.

The services rendered the Bureau by telegraph companies during the year were entirely satisfactory. More efficient service and a saving of $4,000 per annum was effected by a rearrangement of several of the telegraph circuits in January, 1896.

INSTRUMENT DIVISION.

The work of the Instrument Division pertains to the maintenance of the instrumental equipment of stations established for the purpose of securing meteorological observations. This includes the preparation of drawings and specifications required for the purchase of instrumental supplies, accessories, etc.; the inspection, test, and adjustment of all new instruments; their issue to stations; the supervision, by correspondence, of their erection, exposure, and operation while on station; and the monthly inspection of all automatic records, comparative readings, etc., for the purpose of detecting neglect or improper care or the defective performance of instruments.

The importance of a high standard of instrumental accuracy is apparent. A dozen bad barometers and thermometers in use at as many stations, giving erroneous measurements, might lead to an entire misrepresentation of existing meteorological conditions.

The diversified interests of every city which can make good use of continuous automatic records of wind, temperature, pressure, sunshine, and rainfall are too numerous to be mentioned here. With an economical disbursement of the funds allotted to this purpose much can be done during the coming year to remedy defects in equipment.

The stations of the Bureau are visited by citizens in general, and especially by teachers (often with classes) in search of special and technical meteorological information purely for educational purposes.

In this connection the station equipment of instruments may be a most important and valuable lesson. Two years ago the Chicago station was completely equipped, and the result has fully justified the small expenditure necessary.

INSPECTIONS.

The Chief of Bureau has made three tours of inspection, in all visiting about 30 stations of the service. He was especially struck with the lack of uniformity in the equipment of the Government meteorological offices that are supposed to serve the interests of the people efficiently and impartially. To be sure, the importance of the interests served should have much to do with the expenditure authorized in equipping and maintaining the different local services. Instructions have been issued to the Supplies, Instrument, and Accounts divisions which will secure in the future the adoption of many standard appliances.

Formerly four inspectors were employed by the Bureau. It is now thought that with an occasional inspection by the Chief, for the purpose of keeping well informed as to the details of the work throughout the country, one inspector will suffice. It is hoped that during the coming year the Chief of Bureau may be able to personally visit nearly all of the remaining stations. In performing his executive functions he finds that a thorough knowledge of the local offices and of the officials on duty at each is almost indispensable to an intelligent and efficient administration of the Weather Service. With a trusted official in charge of the central office, he has been able to make these investigations, and at the same time to direct important operations of the Bureau by telegraphic communication with the central office. While the duty of personally examining each station and the interests subserved by each local service entails much arduous labor, it is hoped that the Chief of Bureau will be able to continue until all stations have been visited and a thorough personal knowledge acquired of the many diversified interests served by the Weather Bureau throughout the entire country.

REQUESTS FOR WEATHER BUREAU STATIONS.

Thirty-three urgent requests were received from as many cities for the establishment of Weather Bureau stations. These requests bore the indorsements of Senators, Representatives, boards of trade, and leading citizens. Many cities of large population and important industries are so situated that the Bureau has no need of observations from them in its work of making forecasts and issuing warnings. Again, towns of small commercial importance are so situated geographically as to give valuable observations for studying the movement of atmospheric disturbances. Nevertheless, it is believed that, for the benefit of its local interests, every city of over 50,000 population, even though meteorological observations therefrom may not be needed at Washington, should have a station recording automatically each climatic element. Such stations would require the services of but one observer, and he would become the distributing agent in sending out forecasts and warnings to surrounding towns.

SPECIAL IMPROVEMENTS.

During the year that ended June 30, 1896, the distribution of weather forecasts was greater than in any previous year in the history of the

Bureau. The forecasts were sent daily to all places that formerly received them only when exceptional conditions were forecast; there was an increase in the number of towns, hamlets, and farming settlements receiving forecasts of about 10,000.

Important printing devices have been introduced at nine of the principal stations of the service for the purpose of issuing daily weather maps, weekly crop bulletins, and monthly meteorological reports in a more legible manner than heretofore. These improvements made possible the compilation and publication of uniform climatic data of the various States where the improvements were introduced. The attainment of this object has been sought for years. Ten more offices, which are also headquarters for State climate and crop services, will be equipped during the next three months, and it is intended to extend these improvements during the coming year until all important stations are equipped. These printing devices include chalk-plate and logotype outfits, enabling the official in charge to print the daily weather map at comparatively small cost, instead of preparing it by the imperfect milliograph process heretofore in use.

STATION WEATHER MAPS.

A total of 3,512,597 weather maps were issued at 75 stations during the year, an increase of 363,702 maps and one station over and above the preceding year. The increase in the number of maps issued has been made possible largely by the perfection and adoption of the logotype and chalk-plate process at 9 of our largest stations. The services of Mr. John W. Smith, local forecast official at Boston, Mass., are specially commended in connection with these improvements.

REVISION OF FORMS.

A thorough revision of all forms, with a view to simplifying and reducing the work of the observing force, was made during the year. Much good has already resulted from the reforms instituted in this respect. A careful and much needed revision was also made of the book of Instructions for the Weather Bureau Observers.

SENSIBLE TEMPERATURES.

The telegraphing of the readings of the wet-bulb thermometer, popularly known as the "sensible temperature," was begun on September 20, 1895. This is about the temperature felt by animal life, and may be many degrees below the air temperature, the difference between the two temperatures depending upon the relative humidity of the air—the drier the atmosphere the lower the sensible temperature when compared with the air temperature; the damper the air the higher the sensible temperature. This will be better understood when it is stated that in case the air be saturated the readings of the dry and wet bulb thermometers will be the same, and the sensible and air temperatures equal. In the arid regions of the West cases can be cited where the sensible temperature was 38 degrees less than the air temperature, due to the extreme dryness of the atmosphere. In the more humid regions of the eastern part of the country such extreme differences do not occur. Both the air temperatures and sensible temperatures are now published on all charts issued by the Weather Bureau.

AERIAL INVESTIGATIONS.

Prof. Chas. F. Marvin, in charge of the Instrument Division, was directed by the Chief of Bureau in November, 1895, to take up, in addition to his other duties, the study and development of means and appliances for sustaining automatic meteorological instruments at high elevations in the upper free air. A detailed report of his investigations was published in the Monthly Weather Review for November, 1895, and April, 1896. The work during the past seven months was confined to experiments with kites. On one occasion an altitude of 7,000 feet was attained, and but 9,000 feet of wire was played out from the reel. The Chief of Bureau believes this to be the greatest height attained by any experimenter with kites, and that Professor Marvin is deserving of special commendation. He has applied to the problem the ideas from a well-trained mechanical and analytical mind.

Much time was consumed in devising, constructing, and perfecting various accessories and appliances required in the management of the kites and in testing materials used in conducting the investigations. It was found that both the form of the body of the kite and the action of the forces that affected it demanded a much fuller analytical consideration than they had hitherto received. The work has, therefore, consisted in developing and perfecting the kite so as to secure the highest attainable efficiency of action. It is seen that for meteorological purposes the condition of maximum efficiency consists in lifting the greatest weight.

From the results of the kite work thus far it has been demonstrated that for readily attaining elevations exceeding say 1,000 feet wind velocities exceeding 10 to 15 miles per hour must prevail. With kites of light construction good results may be obtained in lighter winds, yet gusts of strong winds are extremely liable to be interspersed with light winds, and unless the kites have a considerable margin of strength damage to the kites and failure of experiments are almost certain to result. When favorable winds prevail, it has been shown that one or two kites of the improved forms, produced as a result of Weather Bureau investigations, suffice for reaching elevations of from 3,000 to 7,000 feet, depending upon the force and steadiness of the winds and the load carried. While such results are attainable when favorable winds prevail, experience has shown that at many stations it would often be necessary to wait several days for a single occasion of favorable winds.

There appears to remain but one other means of exposing meteorological instruments at approximately fixed points in the free air, namely, the use of devices sustained by the action of propellers which either lift the apparatus directly or give to it a spirally ascending or descending motion. Many devices of this character have been proposed by ingenious inventors, and several models of small size have proved that the desired effects on a large scale are within the range of possibilities.

The frequency with which kites may be successfully employed for reaching very high elevations will no doubt be greatly increased as the kite is brought to a more perfect state of construction and the art of its management more completely developed. There must always be, however, times when upper air observations can not be obtained by such means. However good kites may be, therefore, meteorology needs for its free air observations something that may be used on any

and every occasion and in any locality. Captive balloons, which have been so repeatedly tried for military purposes, prove to be of little value for reaching lofty elevations. From the great amount of surface which must necessarily be exposed, it results that the balloon is blown far away from the zenith point over its anchorage by even moderately strong winds. Combinations of the kite and balloon have also been tried. This, in turn, possesses but little advantage over the balloon alone, and in many respects is inferior to the kite. Free balloons may reach great elevations, but they drift with the currents of air and their return is uncertain.

Perfected appliances of this character will prove of such great value to meteorology that their development requires a share of the attention to be given to the greater problem of securing meteorological observations in the free air. Such observations are now generally conceded by meteorologists to be the means by which further and more complete knowledge is to be gained of the mechanism of storms and the sequence of atmospheric phenomena. The idea may seem visionary now, perhaps, but it is a possibility that important meteorological stations of the future will be dual in character. One portion will remain, as at present, at the surface of the earth; the other portion will be poised at a great height in mid air, riding at anchor to the base station, as it were, much in the same fashion as light-ships now ride at anchor at sea, sustained, however, by the operation of other forces than the bouyant action of the air. Simultaneous observations from a system of widely distributed stations of this character would enable the future forecast official to map out the atmospheric conditions, both horizontally and vertically, and arrive at a more exact knowledge of the gradients of temperature, pressure, moisture, etc., than is possible at present with a limited knowledge of surface conditions only.

The complete solution of so great a problem is only attained gradually and by steps. It is hoped that from the small beginning here made results of inestimable benefits to commerce and agriculture will be achieved in the not far distant future.

HUMIDITY OBSERVATIONS AND THE SPINNING OF COTTON.

A report upon the relative humidity of southern New England and other localities, published as Weather Bureau Bulletin No. XIX, by Alfred J. Henry, chief of division, was prepared during the year. The report describes the conditions of atmospheric humidity in localities where the spinning and weaving of cotton are carried on, the special object of the paper being to compare the conditions where successful spinning is carried on with those in localities where it is proposed to establish and develop the industry.

One of the conditions essential to the greatest degree of success in the spinning and weaving of cotton fabrics is a humid state of the atmosphere, and the more constant the degree of humidity the greater is the measure of profitable spinning, especially as regards the finer numbers. The average spinning of England is finer than that of the United States, and the average of the latter varies greatly with the geographic location, the finer spinning being done almost wholly in New England.

The attention of the Weather Bureau having been called to the importance of the subject, and to the probable extension of the manufacture of cotton over a much wider area than it has yet occupied, a comparison was instituted with a view of ascertaining how the natural

ımidity of certain portions of the United States, particularly the uth, where the extension of the art is most pronounced, compared th that of the southern shore of New England.

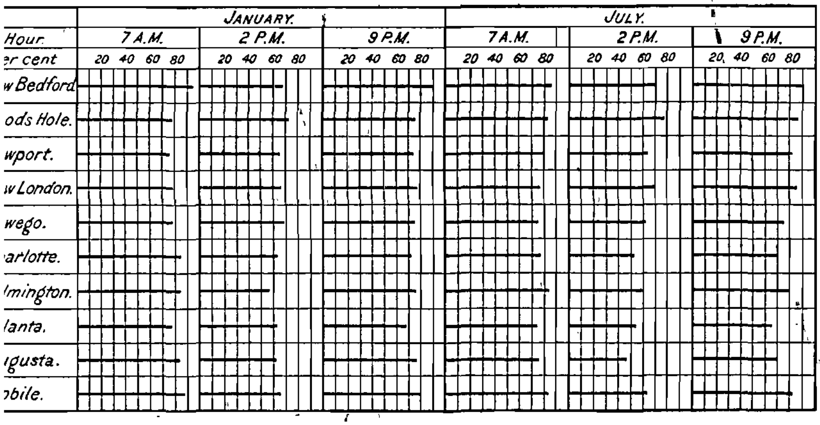
It appears that thus far in the development of the cotton manufacring industry little account has been taken of climatic conditions affecting the quantity or quality of the output. It is also appart that the relative humidity of the atmosphere depends not only on e quantity of vapor present in the air, but also on the temperature ıich determines the point of saturation, and that these elements ry, both as regards time and geographic situation.

It is believed that the place where the spinning of the finer fabrics cotton can be profitably done is where the relative humidity of the mosphere undergoes the least change during the working hours of e day.

The control of both temperature and humidity by artificial means əms to be the final solution of the problem in all cases where the tablishment of mills in a relatively dry climate is contemplated.

The following table is thought to be of sufficient importance, as owing the relative hygrometric conditions at four cities in New ıgland, one on Lake Ontario, three on the South Atlantic Coast, and e on the Gulf Coast, to be reproduced here:

Relative humidity at 7 a. m., 2 and 9 p. m. for January and July.



ə percentage of relative humidity at the hours named is proportional to the length of the heavy black horizontal line.

MAGNETISM AND METEOROLOGY.

Studies into the relations between the solar magnetism and meteorogical phenomena were carried on by Prof. Frank H. Bigelow as e other duties assigned to him have permitted. He is of the opinion at the atmospheric conditions which culminate in the storms travsing the United States are in part dependent upon the solar energy at reaches the earth in the form of magnetic influences; that there ə synchronous fluctuations in the pressures and temperatures of the rthwestern regions of the American Continent in the neighborhood the magnetic pole and the auroral belt; that a train of storms, ıighs" and "lows," advance from that quarter eastward in wellfined tracks; that the position of the tracks and the intensity of the

storms' change along with the strength of the solar magnetic field; that there are many other forces at work to produce storms, such as the general circulation of the atmosphere and the local convection of heat and aqueous vapor, but that among them all must be included the magnetic forces in order to obtain a correct understanding of the mechanism of cyclones and anticyclones.

Unfortunately, magnetic force is not so easy to analyze as gravitation on account of its dual nature, the so-called positive and negative action, according to the properties of the material upon which it acts. Inversion of force is the characteristic of this agent, and it will be of great importance to the science of meteorology if Professor Bigelow is able to fully demonstrate that in the pressures and temperatures of storms there is such an inversion. Professor Bigelow believes that the law is periodic semiannually and not fortuitous, and is so conformed to the position of the earth in its orbit as to bear definite relations to the axes of the sun and the earth, regarded as great magnets. These subtle and delicate signs of the operation of the magnetic forces are such as to require much caution and deliberation in prosecuting the researches, in order not to arrive at unsound conclusions.

The sequence of cause and effect is rather loosely shown, and the existence of such fundamental laws as will enable the practical meteorologists to improve on the old methods of forecasting has not been as yet demonstrated. However, the problem is one worthy the fullest investigation.

INTERNATIONAL CLOUD OBSERVATIONS.

The progress of practical meteorology, especially forecasting, has been greatly impeded by the lack of information regarding the general circulation of the atmosphere in the upper strata and throughout the cyclones and anticyclones, of which the current observations give data on the ground only. In order to overcome this defect and to reach conclusions as to the merits of the two great rival theories of the formation of storms, namely, the convectional and the general circulation theories, meteorologists have declared in favor of concerted work upon the movements of the upper strata, as given by the drifts of the clouds contained in them. At the international conference, Munich, 1891, a committee was appointed to consider the question of concerted observations of the direction of motion and the height of clouds. At a meeting of the international meteorological committee held at Upsala, August, 1894, it was agreed that these observations should commence May 1, 1896, and continue for a year. In the early part of 1896 it was found that the installation of the instruments at some stations could not be completed by May 1, and the cloud year was therefore extended to August 1, 1897.

In order that the United States might bear its share in this important international meteorological work, a board of cloud work was appointed, consisting of Prof. Frank H. Bigelow and Mr. A. J. Henry, chief of the Division of Records and Meteorological Data, to establish the stations and to conduct the operations and computations. The observing stations have been selected so far as possible from those most favorably located in reference to the principal storm tracks. The final list is as follows: Primary station, Washington, D. C. (Other independent primary stations were established at the Blue Hill Observatory, Readville, Mass., by Mr. A. L. Rotch, director, and at Toronto, Canada, by

Prof. R. F. Stupart, director Canadian Meteorological Service.) Secondary stations, Washington, D. C., Buffalo, Detroit, Louisville, St. Paul, Kansas City, Abilene, Vicksburg, Key West, and Baker City. Secondary stations are also maintained at the Blue Hill and Toronto observatories; at Cleveland, Ohio, by Rev. F. L. Odenbach, S. J., St. Ignatius College; and at Waynesboro, N. C., by Mr. Frank W. Proctor, making a total of 2 primary and 14 secondary stations in the United States. It is also to be noted that many of the Weather Bureau observers, appreciating the importance of such studies, volunteered their labor, and are making the observations in addition to their regular station duties, thus showing a commendable zeal in the interests of meteorology. The voluntary observers at Blue Hill, Waynesboro, and Cleveland deserve the thanks of the Weather Bureau.

CLIMATE UNCHANGED.

The extraordinary period of drought which reached its culmination in the autumn of 1895 created a feeling of apprehension in many localities in regard to the stability of climatic conditions over a large extent of territory. A feeling of unrest was also created by the attempt to show that the changed conditions were a result of man's agency in the breaking up and the cultivation of the soil. In order to meet the call for information on the subject, a brief study of the rainfall records collected and preserved in the files of the Weather Bureau was made. It was clearly shown from the investigation made that periods of alternating wet and dry weather were characteristics of the seasons forty and fifty years ago, and that there was no general law governing the recurrence of years of drought or abundant rainfall. Increased interest has been manifested in the Weather Bureau records of rainfall, but whether or not as a direct result of the discussion is unknown.

OBSERVATIONS AT PIKES PEAK AND COLORADO SPRINGS.

We are indebted to mountain observatories for much definite information concerning the movement and other physical characteristics of the upper strata of the atmosphere. The Signal Service established and maintained for a number of years, at great expense, observing stations on the summits of Mount Washington and Pikes Peak, and the attempt was made to utilize observations at these elevated points in daily weather predictions. The observations were found to be of comparatively little value for forecast purposes, and although the stations were continued for some time afterwards, they were finally abandoned in the fall of 1888. The station at Pikes Peak, however, was reestablished by the Weather Bureau in September, 1892, with a much more elaborate equipment than it had under the Signal Service, some of the instruments being devised especially to meet the exigencies of service on a high mountain peak.

A base station at Colorado Springs, 12 miles distant, and 8,036 feet below the peak, was also fully equipped with self-recording instruments of approved pattern, and observations were begun in November of the same year. These stations were maintained until September 30, 1894, at a cost to the Government of not less than $7,000. The observations of pressure, temperature, and wind were published in extenso in the reports of the Chief of the Weather Bureau for 1893 and 1894,

respectively, but no effort appears to have been made to draw therefrom conclusions that might be of possible benefit to the Weather Bureau. Although the location selected was not in the immediate track of the great storms that traverse our northern borders, or even in close proximity thereto, yet it was believed that some useful information could be had from the mass of data collected during the two years' occupancy of the peak and base stations. Mr. Park Morrill, forecast official, was instructed to make a study of the observations with special reference to the conditions which prevail on the peak during the passage of atmospheric disturbances. His report, which will be found in Part VI, Report of the Chief of the Weather Bureau (quarto volume), 1895-96, is commended to the careful study of those who forecast weather changes in the Rocky Mountain region. Mr. Morrill shows, among other interesting facts, that the notable rise of pressure at these elevated stations, in summer, is an effect of the expansion of the air upward from the increased heat. It is also shown that the law of decrease of temperature with altitude is not linear; that there is a considerable layer at the lower limit of the atmosphere, possibly extending to a height of 4,000 feet, which is somewhat uniformly heated, but that above this warm lower layer a more rapid and steady decrease of temperature occurs. This conclusion has an important bearing upon the determination of elevations by the usual hypsometric methods.

Particular attention is invited to that portion of Mr. Morrill's report which deals with the pressure distribution at an altitude of 5,000 feet above sea level. Since the general level of the Rocky Mountain and plateau regions is not far from that elevation, the pressures reduced thereto are free, in a great measure, from the errors commonly introduced in reductions to sea level. The upper isobars, as will be seen by an examination of the charts reproduced in Mr. Morrill's report, differ very considerably at times from sea-level isobars. The former conform more closely to the surface winds, both as to direction and velocity. Some meteorologists assume that the location and movement of barometric areas in this elevated region can best be studied by reduction to a surface 5,000 feet above sea level. However true this may be, the method fails of application to the practical work of the Bureau since the reduction of the pressures at low-level stations to an altitude of 5,000 feet above sea level involves the same difficulties that beset the present reduction of pressures at elevated stations to sea level. As the majority of stations are under 1,000 feet in altitude, it seemed wise to attempt to find a method of reduction for elevated stations that shall be superior to the present method rather than to seek a reduction to a 5,000-foot level. Accordingly a board, consisting of Profs. C. Abbe, H. A. Hazen, C. F. Marvin, Mr. Park Morrill, forecast official, and Mr. A. J. Henry, chief of division, was appointed to consider the question in all its details. The board has submitted a report which will serve as a basis for further investigation and study.

TORNADOES.

On the night of May 27, 1896, the nation was startled by a report that St. Louis, Mo., had been partly destroyed by a tornado. To those familiar with the havoc caused by these destructive storms, the message caused the greatest concern, and additional details were anxiously sought. The full story of the storm was told in subsequent press dispatches, and although later developments showed that it had

not been as severe as first reported, the loss of life and destruction of property were unprecedented. So great a disaster coming so quickly after the occurrence of destructive storms in Iowa, Kansas, Illinois, and Michigan tended to create a feeling that the severity and frequency of these violent disturbances were increasing. It is not believed that there has been an increase either in the frequency or severity of tornadoes. Unfortunately, those of the present year have swept through populous sections of the country, occasionally through the midst of small villages and towns, and once through the heart of one of our great cities. Three hundred and six persons lost their lives in the storm of May 27, 1896; more than the aggregate loss by violent wind during the two years 1891 and 1895, and more than during any single year of which we have authentic records, except 1893.

If we exclude the storm of May 27, the loss of life thus far during 1896, though above the average of previous years, is not so great as in 1892 or 1893.

In almost all cases of great disaster there is a pronounced tendency to exaggerate the actual facts, and thus it happens that press accounts of tornadoes, especially those first sent out, are generally misleading. In consequence, the general conception of the frequency and severity of these unwelcome storms is more or less erroneous. According to a statement recently compiled and published in a reliable newspaper, 676 persons lost their lives by tornadoes during April and May, 1896. An investigation of the cases cited in the published list shows that 515 persons were actually killed by severe thunderstorms and tornadoes during the months named. Of the remaining deaths accredited to tornadoes, 21 were due to drowning in the flood waters of small streams; 11 were drowned at Cairo, Ill., by the capsizing of a ferry-boat in a wind squall; 2 were killed by lightning, and 127 reported deaths were fictitious.

The unusual destruction of life and property has doubtless been the means of awakening general interest in tornadic phenomena and also of stimulating the business of tornado insurance throughout the great interior valleys. Direct application has been made by several companies now writing tornado insurance for statistics of the loss of life and property occasioned by tornadoes. Since the compilation of such statistics is a matter involving considerable labor, and since it would appear that the purchasers of tornado insurance should also be supplied with whatever information might be furnished to the companies, it was decided to review the tornado records of the last seven years with a view of determining the frequency and the destruction caused by these storms so far as past records throw light upon the subject. The revised list appears in the Annual Report of the Chief of the Weather Bureau (quarto volume), 1895–96. It contains a statement of what is known concerning the loss of life and property, the length and breadth of areas of great destruction, and the direction in which the tornadoes moved. The location of each storm is also shown by years, each year's record being on a separate chart. These data, it would seem, should serve a useful purpose in connection with the fixing of rates for tornado risks.

STATE WEATHER SERVICE CONVENTION.

The American Association of State Weather Services held its fourth annual meeting at Indianapolis, Ind., October 16 and 17, 1895, and its proceedings were published as a bulletin of the Bureau.

That more than thirty officials engaged in the climate and crop work of the Bureau should volunteer to attend this convention at their personal cost manifests a most commendable interest on the part of those engaged in the climate and crop work of the Bureau. The great extension of the work of the Weather Bureau in recent years renders of great importance the assembling of section directors and other prominent officials in convention for the purpose of discussing ways and means that would likely prove successful in furthering the work of the Bureau; but it is not thought that the zeal of these earnest and devoted public officials should be allowed to operate to their pecuniary loss, and it is doubted that it will be feasible or proper to hold such conventions in the future unless arrangements can be made to allow to those in attendance a sum equal to their actual expenses.

REPORT OF THE APPOINTMENT CLERK.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
Washington, D. C., November 20, 1896.

SIR: I have the honor to submit a report upon the development of the classified civil service in the Department of Agriculture from March 4, 1893, to November 1, 1896, and upon the number, classification, and salaries of the entire body of employees therein on June 30, 1896.

Respectfully,

J. B. BENNETT,
Appointment Clerk.

Hon. J. STERLING MORTON,
Secretary.

DEVELOPMENT OF THE CLASSIFIED SERVICE IN THE DEPARTMENT OF AGRICULTURE.

The following statement shows the development of the classified service in the United States Department of Agriculture from March 4, 1893, to November 1, 1896:

On March 4, 1893, the total number of persons in the United States Department of Agriculture was		2,497
Of whom were—		
In the classified service		698
Excepted from competitive examination	80	
Subject to noncompetitive examination	12	
		92
Leaving subject to competitive examination		606
On November 1, 1896, the total number of persons in the United States Department of Agriculture was		2,217
Of whom were—		
Above classification (appointed by the President)		3
In the classified service		1,658
Excepted from competitive examination	1	
Subject to noncompetitive examination	0	
		1
Leaving subject to competitive examination		1,657

This shows an increase between March 4, 1893, and November 1, 1896, of 1,051 persons whose positions, should they become vacant, can be filled only by appointees who have successfully passed a civil-service examination and been certified by the Civil Service Commission as

eligible for appointment thereto, or by the transfer of persons who are already in the unexcepted classified civil service.

The remaining 556 persons on the rolls of the Department on November 1, 1896, and not subject to civil-service examination, were laborers, charwomen, and others in a like subordinate grade, many being river, rainfall, etc., observers in the Weather Bureau, receiving compensations ranging from 10 cents per day to $25 per month, and their employment is intermittent.

THE EXECUTIVE CIVIL SERVICE OF THE DEPARTMENT OF AGRICULTURE.

The table following gives the number of civil officers of the United States Department of Agriculture confirmed by the Senate above classification, the number of classified persons by classification, the number of excepted places, the number excluded from classification, and the number of laborers or workmen below classification, and number not yet classified, carried on the rolls of the Department, whether compensated by a fixed salary or otherwise, inside or outside of Washington, D. C., on June 30, 1896:

Table showing the number, classification, and salaries of the employees of the Department of Agriculture.

Bureau, office, or division.	Classified service.												
	Classified by compensation.												Private secretaries or confidential clerks.
	Class.												
	A	B	C	D	E	1	2	3	4	5	6		
	Less than $720.	$720, but less than $840.	$840, but less than $900.	$900, but less than $1,000.	$1,000, but less than $1,200.	$1,200, but less than $1,400.	$1,400, but less than $1,600.	$1,600, but less than $1,800.	$1,800, but less than $2,000.	$2,000, but less than $2,500.	$2,500 or more.	Total.	
Office of the Secretary	6	13	7	1	13	11	5	5	3	1	1	66	2
Division of—													
Accounts and Disbursements	....	....	....	....	1	1	4	2	1	1	1	11	....
Statistics	11	14	8	13	16	16	11	3	1	2	1	96	....
Botany	6	....	....	4	1	5	1	....	2	....	1	20	....
Entomology	2	2	1	....	1	3	3	2	3	....	1	18	....
Economic Ornithology and Mammalogy	3	....	1	1	3	3	3	....	3	....	1	18	....
Pomology	2	1	....	1	1	2	....	....	1	....	1	9	....
Microscopy	....	....	....	....	....	1	....	....	....	....	1	2	....
Vegetable Physiology and Pathology	1	3	....	....	4	3	1	....	4	....	1	17	....
Chemistry	3	2	....	....	....	4	5	1	1	....	1	17	....
Forestry	1	1	....	2	1	1	3	1	1	....	1	12	....
Publications	....	....	....	....	5	2	2	1	1	....	1	12	....
Seeds	7	3	8	....	1	2	1	1	....	3	....	26	....
Document and folding room	4	....	1	....	2	....	....	....	1	....	....	8	....
Division of Gardens and Grounds	6	10	7	1	....	1	....	....	....	....	1	26	....
Museum	....	1	1	....	1	....	1	....	....	....	....	4	....
Office of—													
Experiment Stations	2	7	4	2	4	5	4	2	....	1	1	32	....
Irrigation Investigations	....	....	....	....	....	....	....	1	....	....	1	2	....
Division of—													
Agrostology	7	2	....	....	....	....	2	1	....	....	1	13	....
Agricultural Soils	1	5	....	....	1	....	1	....	....	....	1	9	....
Office of—													
Inquiries Relating to Public Roads	1	....	....	1	....	1	....	....	....	....	1	4	....
Fiber Investigations	....	....	1	....	....	....	....	....	....	1	....	2	....
Furniture, cases, and repairs	....	....	2	1	....	....	....	....	....	....	....	3	....
Bureau of Animal Industry	196	184	2	14	172	86	35	10	8	10	4	721	....
Weather Bureau	118	16	56	10	123	124	51	7	14	4	10	533	....
Total	377	264	99	51	350	271	133	37	44	23	32	1,681	2

Table showing the number, classification, and salaries of the employees of the Department of Agriculture—Continued.

Bureau, office, or division.	Unclassified service. Excluded from classification under Rule III, section 8. (a.)	(b.)	(c.)	(d.)	Total.	Above classification (Presidential). Confirmed by Senate	Below classification. Laborers or workmen	Aggregate number.	Aggregate salaries.	Vacancies in statutory positions.	Employed outside of Washington, D.C.
Office of the Secretary						2	7	77	$89,020.00	12	
Division of—											
Accounts and Disbursements								11	17,300.00	2	
Statistics							1	97	98,920.00		29
Botany							2	22	22,420.00	1	1
Entomology							1	19	23,780.00		
Economic Ornithology and Mammalogy							1	19	22,580.00		6
Pomology								9	10,520.00		1
Microscopy								2	3,700.00	2	
Vegetable Physiology and Pathology							2	19	22,240.00		2
Chemistry							1	18	21,340.00		
Forestry								12	15,500.00		2
Publications								12	16,100.00		
Seeds							5	31	28,210.00		
Document and folding room								8	7,040.00	1	
Division of Gardens and Grounds							3	29	23,200.00		
Museum							2	6	4,920.00		
Office of—											
Experiment Stations							1	33	35,900.00		12
Irrigation Investigations								2	4,100.00		
Division of—											
Agrostology							1	14	11,280.00		6
Agricultural Soils								9	9,260.00		1
Office of—											
Inquiries Relating to Public Roads								4	5,200.00		
Fiber Investigations							1	3	3,240.00		
Furniture, cases, and repairs								3	2,580.00		
Bureau of Animal Industry							26	747	644,450.00		699
Weather Bureau	481				481	1	20	1,035	570,765.70	18	848
Total					481	3	74	a2,241	b1,713,565.70	36	1,607

a Deducting the 36 vacancies in statutory positions, the number actually on the rolls is 2,205.
b The net amount of salaries of those actually on the rolls is $1,677,455.70.

19 JUN 1936